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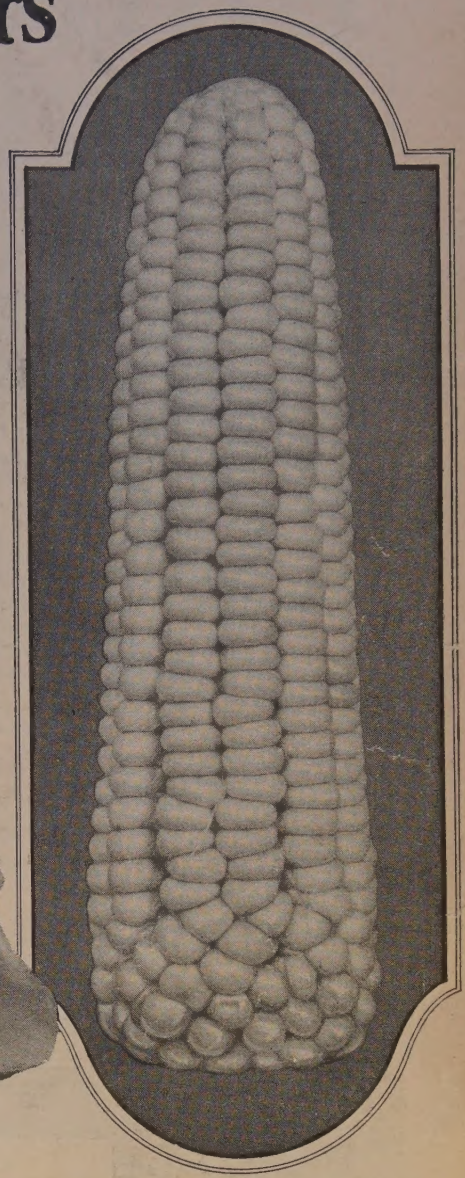

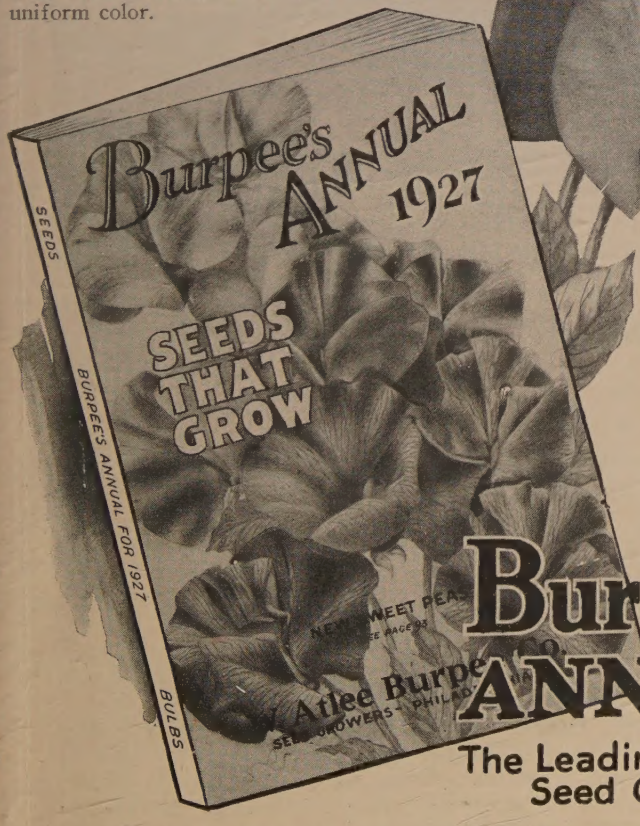

FRAGRANT new Orchid Sweet Peas—coral-pink, terra cotta suffused orange, and sparkling blue—will bring delight to the lover of Sweet Peas. Wonderful new Giant Dahlias in rose, amaranth-pink, peach-red, apricot, silvery lilac, brilliant orange-red, and orange-buff autumn tints—colors and hues no artist could ever hope to portray in their exquisite beauty.

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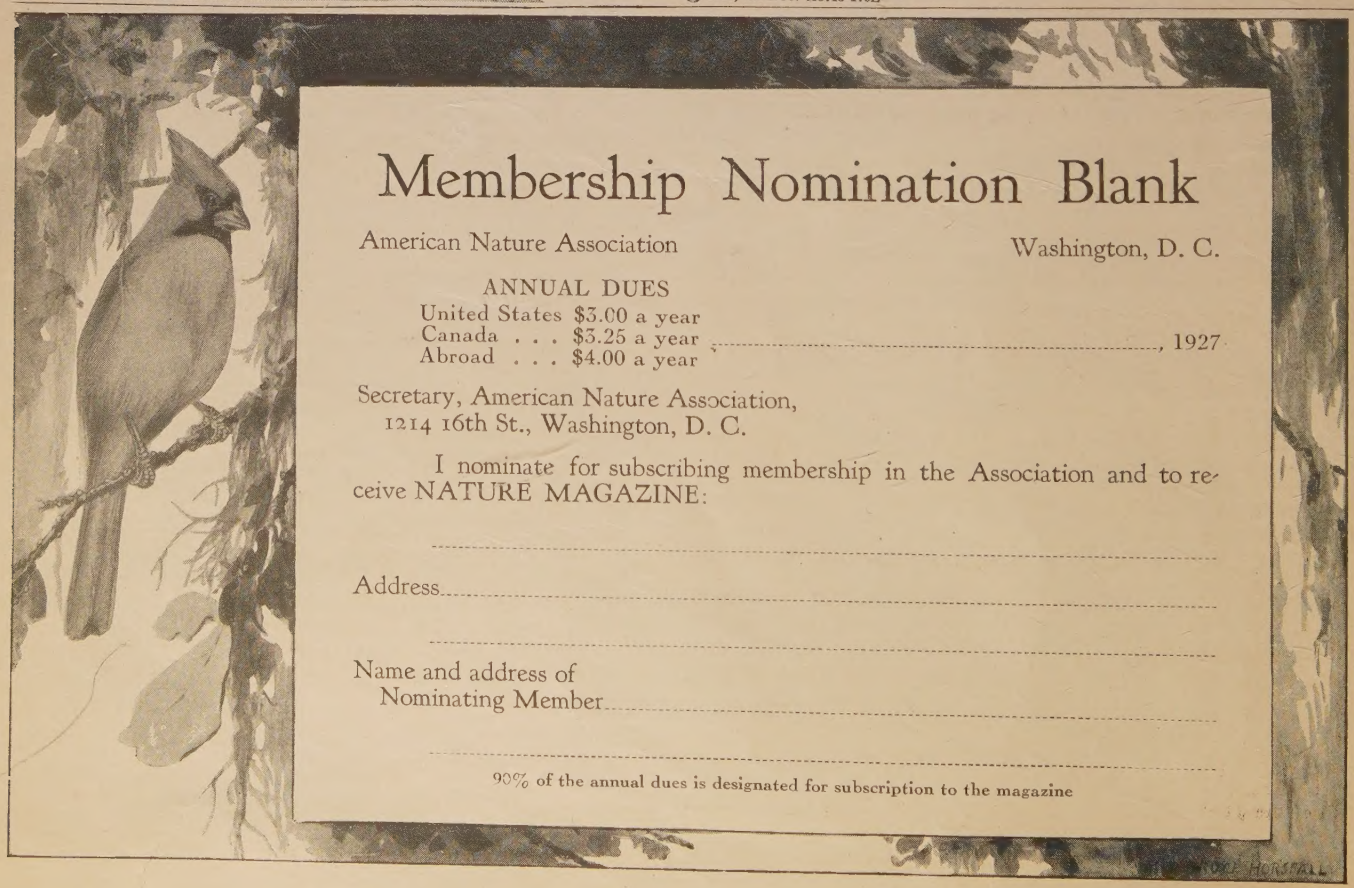
Florida Wild Flowers

Early in 1926 there appeared an article in Nature Magazine on wild flowers in Florida, written by Mary Francis Baker. At that time we announced the forthcoming publication of a volume by the same author under the title *Florida Wild Flowers*. This book has now come from the presses of The MacMillan Company and seems to fulfill all that was expected of it. Mrs. Baker has made this volume a handy identification guide to the wild flowers of a state that boasts an abundant variety. It should delight those in the southern state who love to botanize as well as those who love the flowers and may have opportunity to study these particular ones on their native heath. We hope that the book may assist in preventing wholesale destruction of wild flowers in the course of developing sub-divisions. The sale price is three dollars.

Killing Garden Enemies

Many are the gardeners who tear their hair frequently when they find their roses chewed and other favorite flowers ruined. Many, also, are the enemies and varied their tastes. To help the distracted flower grower, the United States Department of Agriculture has brought out a bulletin giving directions as to how one may best battle the insect enemies of the flower garden. Different sprays are recommended and copies of the bulletin—Farmers' Bulletin 1495-F—can be obtained from the Department in Washington as long as the supply lasts.



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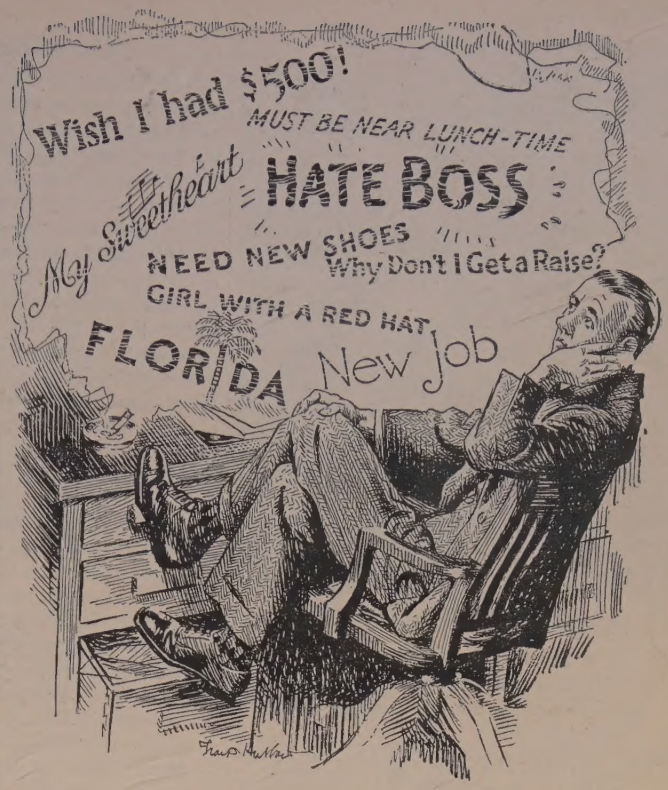

HIS mind is a hodge-podge of half-baked ideas.

He thinks of a thousand "schemes" to make money quickly—but **DOES** nothing about **ANY** of them.

Thoughts flash into and out of his brain with the speed of lightning. New ideas rush in pell-mell, crowding out old ones before they have taken form or shape.

He is **SCATTER-BRAINED.**

His mind is like a powerful automobile running wild—destroying his hopes, his dreams, his **POSSIBILITIES!**

He wonders why he does not get ahead. He cannot understand why others, with less ability, pass him in the prosperity parade.

He pities himself, excuses himself, sympathizes with himself.

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His trouble is that he does not know how to **USE** his brain.

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There are millions like him—failures, half-successes—slaves to those with **BALANCED, ORDERED MINDS.**

It is a known fact that most of us use only one-tenth of our brain power. The other nine-tenths is dissipated into thousands of fragmentary thoughts, in day dreaming, in wishing.

We are paid for **ONE-TENTH** of what we possess because that is all we **USE.** We are hundred horse-power motors delivering only **TEN** horse power.

What can be done about it?

The reason most people fall miserably below what they dream of attaining in life is that certain mental faculties in them **BECOME ABSOLUTELY ATROPHIED THROUGH DISUSE,** just as a muscle often does.

If, for instance, you lay for a year in bed, you would sink to the ground when you arose; your leg muscles, **UNUSED FOR SO LONG,** could not support you.

It is no different with those rare mental faculties which you envy others for possessing. You actually **DO** possess them, but they are **ALMOST ATROPHIED,** like unused muscles, simply because they are faculties you seldom, if ever, **USE.**

Be honest with yourself. You know in your heart that you have failed, failed miserably, to attain what you once dreamed of.

Was that fine ambition unattainable? **OR WAS THERE JUST SOMETHING WRONG WITH YOU?** Analyze yourself, and you will see that at bottom **THERE WAS A WEAKNESS SOMEWHERE IN YOU.**

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But if they use their **HEADS** they will realize that people cannot be **HELPED** by tommyrot and that there **MUST** be something in Pelmanism, when it has such a record behind it, and when it is endorsed by the kind of people listed here.

If you are made of the stuff that isn't content to remain a slave—if you have taken your last whipping from life,—if you have a spark of **INDEPENDENCE** left in your soul, write for this free book. It tells you what Pelmanism is, **WHAT IT HAS DONE FOR OTHERS,** and what it can do for you.

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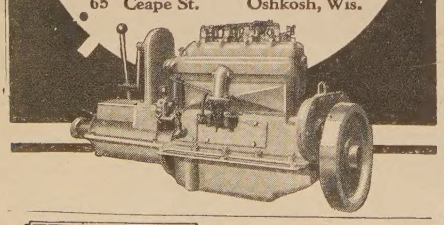

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Books on Bird Migration

The migration of birds has long constituted a favorite branch of the study of these creatures, which to the majority of the human race are probably the most interesting of all natural groups. Some of the earliest recorded writings—the Bible, and the essays of Aristotle—refer to this habit, and through the ages its study has been pursued with ever-increasing intelligence and ardor. In early times, while the flight of strong-winged birds over large bodies of water was considered to be an undisputed fact, others of weak flight were presumed to avoid the necessity of this difficult feat by hibernation, even in the mud beneath considerable depths of water. Possibly such notions may even now be entertained by some; certain it is that they were widely credited until comparatively recent times, and in many cases formal affidavits were offered in their support, a proceeding which in the minds of many removed them from the realms of fancy. Other equally fantastic explanations (e. g.—that small birds traveled on the backs of the larger) were gravely put forth; and it is interesting to note that the beliefs of unlettered tribes in many lands thus explain the simultaneous appearance of large and small birds in their summer homes. Contrasted with this view, based on the apparent helplessness of the smaller birds, was the theory advanced by one author, that migratory birds spent their vacation periods on the moon.

Migratory movements of birds are exceedingly diverse in character. They range from movements from a higher altitude to a lower, involving only a few miles, to the semiannual flights of certain species which take them to and from their breeding areas in the high Arctic and their "wintering" grounds in the icy lands of the distant Antarctic, then in its summer.

The literature of bird migration has recently been enriched by two books: "Problems of Bird Migration," by A. Landsborough Thomson (Houghton Mifflin Co., Boston, 350 pages, $5.00); and "The Migration of Birds," by Alexander Wetmore (Harvard University Press, Cambridge, 217 pages, $2.50). Dr. Thomson was for many years Professor of Biology in Aberdeen University, and during the past several years has lived in London, where he has devoted most of his time to ornithological studies, mainly of migration. Dr. Wetmore, Assistant Secretary of the Smithsonian Institution, is well known as a life-long student of the habits, structure, and classification of birds.

The two books are in a measure complementary, Thompson's referring largely to the Old World, while Wetmore's naturally has more to do with America. Thomson's book is the more formal treatise, discussing rather fully many phases of the subject which are but briefly referred to by Wetmore, whose book is based primarily on a series of lectures delivered before the Lowell Institute at Boston in the autumn of 1925. Each was written without knowledge of the other being in preparation. In each case ample use has been made of the results of bird-banding, the most effective and in fact the only known method of

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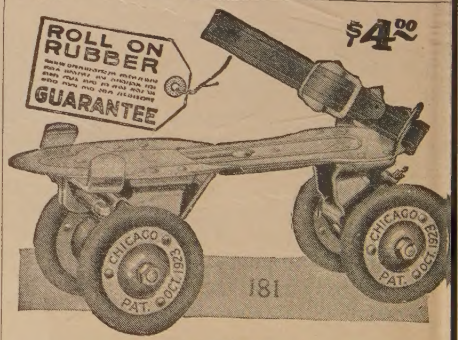

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learning the movements of the individual bird, and one which has been developed mainly within the past twenty years. Discussion of these results occupies 128 pages of Thomson's work, while in Wetmore's less pretentious volume frequent mention is made of banding, which he has personally carried on extensively.

The various theories which have been advanced by serious students of the subject to account for the origin of migration are discussed by both authors. Both seems inclined to favor the view that migrations of a broad scope had their principal origin in geological changes, and especially in the several glacial movements which have so profoundly influenced the dispersal of life, especially in the northern hemisphere. Still, the great complexity of the matter is recognized by both authors, and it is pointed out that the advantages that accrue to birds of many species from migration do not in themselves explain its origin. As Thomson says: "All theories which seek to explain the origin of migration are, however, beset with difficulties and complexities. Nor do these thories explain the nature of the inborn custom, or the manner of its inheritance." E. A. P.

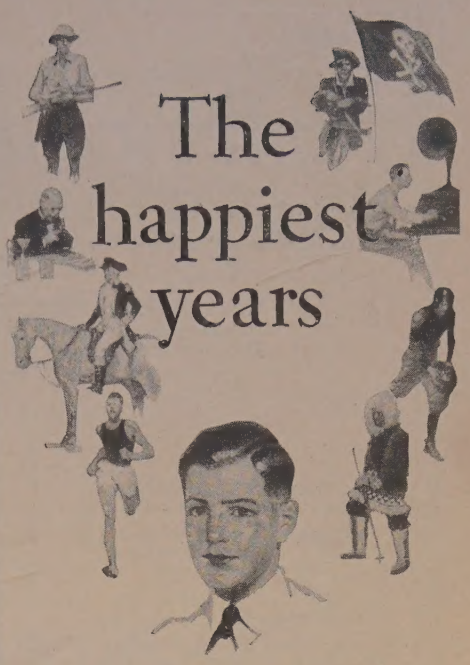
New Nature Leaflets

The Book of Knowledge Science Series, edited by Ellis C. Persing of the Department of Science, Cleveland School of Education, seems to be a notable contribution to the cause of Nature teaching. A unit of study in Elementary Science consists of eight well-printed and illustrated pages concerning some definite subject. Some of these are: Bats and Their Friends; The Pigeons and the Doves; The Wonderful Amphibians; The Sponge and What It Is; The Immensity of the Universe. On the first page is a series of questions, the answers to which can be found in the well-written account which follows. In Zoology, our own more familiar species are described, and are compared with related ones now living in other lands, as well as with some of the more interesting of those which formerly lived but have now disappeared, some by the hand of man.

The information is reliable and appears to us to be presented in a manner which should appeal to both teachers and pupils. Kindness and sympathy are taught, the imagination of the child is courted, and the reasonable suggestion is made that the lessons form the basis for exercises in English. Altogether the leaflets seem admirable.

Using the Lumber

Of interest to the lumber trade is a recent government bulletin entitled "Industrial Outlets for Short-Length Softwood Yard Lumber." This booklet, prepared by Edward M. Davis of the Forest Products Laboratory, Forest Service, U. S. Department of Agriculture, gives the results of a study of factory and industrial uses for short lengths of softwood lumber. It may be obtained by remitting 10 cents to the Superintendent of Documents, Government Printing Office, Washington, D. C.



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JANUARY

"Roaring snows, down sweeping from the uplands,
Bury the still valleys, drift them deep.
Low along the mountains lake-blue shadows
Sea-blue shadows in the snow drifts sleep
High above them
Blinding crystal is the sunlit steep."

—Sarah Cleghorn.

Even the most wakeful of the black bears will go to sleep this month. When she can no longer find food, she will crawl into some rude shelter and let the snow and ice wall her in completely. During the long sleep which follows, her body will feed from the layer of fat which she has stored.

Beavers and muskrats don't know when it snows and they don't care either. Down in their snug lodges and submarine channels, they live and eat undisturbed by the weather.

In the woods, down under the snow over which you are walking, spring peepers lie nestled in the leaves and moss half frozen and asleep.

In shallow burrows in the earth, toads lie cold and inert. They still live, however, and in the spring will wake up hopping and hungry.

On top of the snow are the tracks of the white-footed mouse who drags his tail when he jumps. These mice are often found beneath linden trees under whose roots stores of linden nuts and other fruits are hoarded for winter use.

Like rabbits, squirrels jump. But squirrels put their fore paws down side by side. Their tracks may lead to lunch counters which are sometimes the tops of tree stumps where bits of nut shells are almost certain to be found.

Bob-whites are living in flocks called coveys which usually comprise a family party. Under bushes and thickets, the snow is often covered with their foot prints. They are eating seeds and frozen buds.

Overhead, the barbed tongue of the downy woodpecker keeps busy piercing the insects and larvae which he persistently "drums" out of the tree trunks.

That tiny bird, who with the chickadee feeds on the insect larvae sleeping on the twigs, is the golden-crowned kinglet. You can tell him by his white wing-bars, forked tail and striped head.

The leaves are gone and the red-eyed vireo, "preacher bird," is no longer needed to clean them. He's busy eating insects from the leaves in South America, four thousand miles away. How many insects must he eat to produce calories enough to carry him that great distance twice a year?

The twigs of Japanese Kerria bushes are green. The bare shiny scarlet limbs of red osier flash and glitter in the sun.

The snow beneath the birch trees is dotted with tiny brown seeds fallen from the cones above. Take out your pocket lens and examine one and behold a tiny bird with outspread wings.

Bare trees make an interesting skyline. The elm trees wear tilted caps, red maples wear oval crowns and sugar maples have broad flattened tops. Beech tree hats are soft as feathers. There are dunce's caps on the lombardy poplars. Old oaks wear ragged tobbogan caps.

Narrow and tapering as church spires, the fir trees stand half buried in the mountain drifts. Were their branches longer they would break under their burden of snow.

Trees grow by stretching their fingers and tops and adding to their waists. It is easy now to measure how long their fingers grew last summer.

Those dry rattling weeds did all their growing in one season. In only about twelve weeks, ironweed, Joe-pye weed and others must find and assimilate enough food to send their stalks six or seven feet high. Even now beneath the snow at the foot of the dried stems, green rosettes are ready waiting for spring to start their swift metabolism.

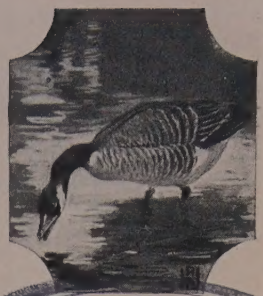
Orion and his dog make a striking picture in the winter sky. Beneath the hunter's feet Lepus, the hare, is crouching. The four faint stars in his rhomboid ear lie five degrees below Rigel which marks Orion's left foot.

West of Rigel, the River Po begins. It rambles to the west until almost to the whale. There it curves like a horseshoe to the south and east, then dips below the horizon.

Prepared for Nature Magazine by the Cleveland Museum of Natural History

"THE UPPER NIGHT, WHENCE CAME THE VOICE OF THE FLOCK."
"And those who had asked no more of life were of a sudden stricken with a hunger for living. And those who were cold were warmed."

NATURE MAGAZINE



Vol. IX JANUARY, 1927 No. 1

PROVISO TOWNSHIP
HIGH SCHOOL
LIBRARY
MAYWOOD, ILL.

Out of the smother of wind and rain,
Torn from the cloak of night,
Falleth an ancient voice again—
Brazen and wild and bright!
—VOICE OF THE FLOCK.

VALIANT LEADS THE V

By BEN HUR LAMPMAN

(ILLUSTRATED BY R. BRUCE HORSFALL)

NOW the hero of this tale is called Valiant. He is so named because, as all his brothers of the flock, his heart was strong. And if any would quarrel with this christening, or with aught that follows, let him take thought of the wild creatures; asking himself if, indeed, it is all in the books; and whether the creatures are not conscious as we of joy and grief; or if, perchance, Spring does not sing for them as she sings to us. This is the story of Valiant.

The old gander was restless, and his flock, some twenty birds in all, was well aware of his mood. The sodden acres of the rice fields were but half gleaned, yet the geese fed idly, for their brown-gray bodies were plump and glistening with fatness. From time to time they lifted broad wings in brief, low flight and dropped to their gleaning again. A slow rain fell, gathering in dark little pools. When the geese came to these they curved their slim and graceful necks, each with its white cravat, tossed their black heads in motion oddly fluent, and plodded through with low chucklings of delight. But always they watched, though without seeming, the master of the flock, who did not share their gossip that day, and who paused often as one who listens. At such times he was motionless to the least feather, the wise old head held high, alert, sagacious, strangely eager.

"A SLOW RAIN FELL, GATHERING IN DARK LITTLE POOLS"

Being but a young goose, who had troubled himself little with the problems of the flock, since food and water were the proper worries of his elders, Valiant gave now and then only a casual glance at the leader, wondering vaguely why any bird should neglect such foraging. For this was the clement South, the land of plenty. One might send his call into the morning mist and hear it given back by a hundred happy flocks. It was a province in which to linger, and glean, and drowse, and fly but briefly, and hold amiable converse. Yet as Valiant observed the master of the flock and his strange restlessness, there was roused in the youngster a mild concern, and he curved his sleek head to the comely goose beside him, speaking in that musical undertone which serves for talk.

"For what does he listen, the Old One?" mur-

"THEY CAME AT SUNRISE TO THE LAKE-THAT-IS-FAR-ENOUGH"

mured Valiant. "I hear no comrades shouting to us."

She gave him back his glance with eyes grown softer on the instant, and wiser, too; with eyes as young as yesterday, and yet as old as all the years Time has counted. Her wings lifted, beat strongly, and came to rest again. She turned from him as she said—

"I think he listens for April."

And April whispered to the Old One, though it was not yet April. Somehow the promise of her presence sped forward from the season and gave him longing. It was late afternoon, nearing a gray twilight, when the lord of the flock sent a single trumpet tone ringing through the wetness—a wild and joyous note that stilled all gossip and lifted every head from the gleaning. For the call was the call of the sky lanes, and, as such, an order not to be denied. They were to quit the South and its rice fields on a quest for new pastures and for April. New lakes. Old friends. The sea-wind cleaving through a morning murk. Young grass. The savor of salt marshes. The spacious North. The flock shifted and wove with eagerness. He had heard April.

As he called again they rose; not circling, but slanting steadily toward the high lane of migration, where level, tireless flight would draw the North toward them as to a magnet. Out of the gathering dusk answered another flock, and a second, swinging in from east and west. The flocks merged without confusion, melting into the flanks of the winged-V, until the pilgrims were some forty in number, driving northward with the Old One. They caught up the measured chant of flight, that is passed to and fro along a company, and given to the best throats—so these may fling it onward to the waking stars, and downward to a drowsy world. It is no chatter of the lesser peoples, but a timed resonance, clear and strong as a bugle; fraught with a meaning to stir the blood of earthlings. And many men, almost as many as have ever been, have pondered words to fit the message, and have sighed and gone their ways, finding but one. The word is freedom. So chanting, the flock entered night.

Save for the winnowing of their wings, the whistle of the chilliness through which they sped, and their own bugling, they moved for the most in a silence vast as the sea and softly dark as leaf loam. They seemed not to win forward, but to poise on a strong gust above the vanished world—for the sky was blind with rain and no stars peered, while the lights of farm and village might not thrust through the storm to twinkle at them. Yet they held their measured distance from the earth, and the lawful spacing of the flock neither dwindled nor grew. Valiant was aware of his brother at his left shoulder, and of the comely young goose at his right flank. His heart was glad with flight, and he timed his call to the Old One's. Thus they chanted, mile-high and hurtling:

"Honk! a-honk! honk! honk!"

There was a movement to the air, undulant, as a long smooth swell at sea. The flock rose with it, dipped, and rose again. And once, when the thin moon pressed through a cloud, the bend of a river flickered like a drawn blade; and once, from a hidden lake, lost in night and drizzle, certain of their clan gave tongue and called to them; and at another time they heard the softened, idle yammering of dogs; the sweetness of a bell; a faint, far engine panting up a hill.

In the third hour the darkness became hued with faint rose, wan almost as ashes, dome-shaped, definite, and yet without margin. It was the ghost of a color, breathed into the night like a vapor, and Valiant shouted to it, for he knew it hovered a vast rookery of men—who must be shunned and spoken. Against the clouds and rain this city cast its midnight radiance—as glow-worms do.

The flock entered the color, chanting. Heavy pinions beat darkly against it, rain drops glinted as they slanted past, and under the voyageurs was spread a field of brightness that thinned and waned toward the surrounding night, with here and there a single topaz for sentry. The Old One did not circle that brightness foolishly, after the habit of some leaders. He led the company across it as an arrow fares, yet he bade them, nevertheless, speak of freedom to the creatures that dwelt there—of freedom, and of April, of a beach no boat has known, of a lost lake in a lost range, of marshes and the smell of marshes, and windy trees against a morning sky. And the flock, being bidden, shouted to the city.

They who dwelt there, and who heard, and these were many, peered into the upper night whence came the voice of the flock. And those who had asked no more of life were of a sudden stricken with a hunger for living. And those who were cold were warmed. A girl stretched out her arms toward the voice. There was a thief forgot his plan. And in some an old sadness, they had thought long stifled, begged again. To all manner of men the voice fell, working white magic.

Listen! Geese! Wild geese!

The free voice faded. They caught it to their hearts, momently, ere it was lost in the void.

The Old One led his flock onward into morning, through the gray wraith of dawn; and as they sped the clouds retreated to westward, the last pale stars were snuffed, and out of sunrise leaped the sun, ruddy and pulsing. Then wood and field, and farm and village, and all the threadwork of river and creek, stitched in silver, were patterned beneath the flock like the dream of a child; and roads twined through the hills and threads of ochre, and were lost in the dark masses of the firs. Here were tumbled mountains crested with snow, and there the baron of the range, in dignity apart, mantled from summit to foot. And yonder—the Old One bugled to see it, while all his train took up the call—lay a prairie broad beyond vision, green as a sward in heaven, and set with a great lake that lay upon it like a shining targe.

Out of the south, from every tangent, flocks were calling, and Valiant and his comrades, slanting down in happy weariness toward the sweet water, gave tongue to that quickened measure which celebrates the end of a night flight. It is a poor thing, this translation, since it cannot hope to capture that bright resonance which is in bells, trumpets, bugles, and the throat of the flock. You must think of the geese as you read it, and it may be that some echo of the song will ring for you.

Hark! The wind sings! The sky wakes!
. Dawn! The red dawn! The wet breeze!
Mark! The green fields! The blue lakes!
Mark! The white stream! The black trees!
Flocks that follow! Hark! O hark!
Ware the hollow! Mark! O mark!

So they came at sunrise to the lake that is known, to many of the waterfowl, as Lake-That-Is-Far-Enough. It was awake with the wind, and all its waves were tipped with foam. These midget combers, in their multitude, contrived a deep, sustained voice that traveled far across the prairie, and Valiant, riding with his comrades, midway of the tossing waters, thought it as fine a sound as any tide might utter, and waved his wings and shouted. For that matter, the lake was clamorous with the babel of many species, and at a glance one saw a dozen companies winging low over its fretted surface, or setting their wings to settle, or curving cleanly down from distant flight. Feigning fear, or in sheer joyousness, a thousand birds would take wing as one—with a roar like a river in spate—circling Lake-That-Is-Far-Enough, speeding into dimness across the prairie, wheeling, driving back again, growing larger and swiftly larger, until the rapid whish-whish-whish of playful wings passed briefly overhead and they dropped again to the lake.

These were ducks, and it is in such manner that they play. The males were bright in bridal plumage, so bright that lustrous greens and blues, and flame reds, and ebony, flashed as the rich colors kindled in the sun. And they, and all the other birds, from the plover racing over the turf to the huge white swans cruising in on the south wind, made talk of April. Pair by pair the ducks diverged from the flocks and loitered companionably shoreward, or left the lake and their fellows, on roving wings, to find some lone little slough of their own. And on the shore the freckled bittern trod, like some lovesick yokel, an awkward measure for his lady.

At Lake-That-Is-Far-Enough the Old One bade them tarry for a time, though his fancy was yet fixed on a land far to northward. Of mornings, while the lake exhaled a wreathing mist, they followed him to the feeding grounds, and were soundly drilled in the maneuvers of flight. Thus, it was proper at times to break formation, creating of the one flock from two to four lesser V's, that these might be united again at the Old One's call, in orderly evolution. And on nearing the stubble he would give them leave to swing forward on either flank, until the line of trumpeters advanced abreast, flying slowly as they chatted of the field beneath.

Valiant outshone his fellows in nimbleness of wit and wing, and it was said among the flock that the Old One had marked him for preferment. At least he gave to Valiant the coveted post of sentinel; and, since a sentinel need not be lonely, Valiant chose the comely young goose to keep him company those times he watched apart. Of the two, it must be confessed, she was the more vigilant, which was well for Valiant.

He paid little heed to all the gossip of April, for it seemed to him the world was good when food was plentiful and sweet water to be had within a short flight. But near Lake-That-Is-Far-Enough he twice had such word of April as gave him thought, and each time the word was sunless, yet wonderful, as well. For him these matters might have lacked significance, but to her who fed with him they were meaningful, and Valiant marveled secretly at her sagacity.

"AT THE LAKE THE OLD ONE BADE THEM TARRY FOR A TIME"

There was a goose who did not fly with the flocks, nor seek the lake when they returned, but who lived apart, and on the feeding grounds frequented the highest knolls. There she was to be seen at almost any hour of daylight, lifting her head to call and call again. And of the answers that came back to her she would have none, but, shaking her wings impatiently, would send another call ringing over lake and prairie, listening intently for an answer that did not come. Longing was in her call, and grief, and faith, and when Valiant had heard it often he spoke to the comely goose, for it puzzled him. Again her eyes were bright with an old wisdom.

"It is her mate she calls," said the goose.

"Let her be silent, that witless one, if he does not answer," hissed Valiant. "He will come when he chooses."

"Valiant," she said, "her mate will not come to her this day or another. He has been quiet for three Aprils past."

"Then she is thrice foolish," answered Valiant, "since he cannot come."

"That, too, she knows," said the goose, "yet she must call."

It is so the birds speak of their dead, when wings are folded and cry and song are taken away. They call it quiet. Valiant mused for a moment, staring at the solitary bird on the knoll, then fed again as though to put the problem out of mind. And it was almost forgotten, when, scarce a day later, they came upon a drake pintail standing in the bent brown grasses of a swale. His people were a-wing, but the drake seemed neither to hear nor see them, nor did he more than glance at Valiant and the comely goose as they drew near. And they saw that he stood guard above a huddle of rain-bleached feathers, around which, in his long vigil, he had trodden down the marsh grass. As they looked at the thing he guarded a lustreless beetle, with zigzags of pale lemon barring its wing-sheaths, parted the draggled plumage and crept lazily forth. The beetle sunned itself on that which had been a she-duck.

"Friend," said the comely goose, and very softly, "come away. Your mate is quiet."

"And who are you to know my mate?" challenged the drake, tossing his fine head. "I am waiting for her. It is April. Be off with you, geese! She is not quiet."

Valiant said nothing and he was eager to be gone, for it seemed to him that April was sadness and folly. Without a glance at his companion he lifted wing and flew to another station. And, alighting, he gave a call that was triumphant self—alive, happy, glad of the south wind! He found the comely goose beside him, contentedly cropping the bright new grass.

Had it not been for the leave-taking of the snow geese, whose talkative band had tarried also at Lake-That-Is-Far-Enough, the Old One might longer have been content with that agreeable region. Now, as all water-fowl know, the white voyageurs of the goose clans find happiness in the remote North, even beyond all waters and all prairies known to such a seasoned traveler as the Old One. Indeed, they make it their boast, with such gabbling as deafens the listener, that their goslings are reared in the presence of the bergs, and that a proper snow goose is white as the white bear, or the great owl of the arctic, or ptarmigan crouched in the drift—white as the blizzard itself, save for the ebony of their wing-tips. And while other geese know them for a merry rabble, that never quite can master the V, and that fly often as they gossip, loosely and in the mob, it is conceded that the snow geese seem first of all to have authentic word of April.

So when the snow geese rose from the stubble one morning, in a confused cloud of glistening whiteness, their hundred tongues clacking together, the Old One stiffened to watch them—and they did not turn toward the lake. No, in one welter of wing and voice they drifted northward. And this is what they were saying, although you must utter it rapidly, as did they—yes, and give your fancy rein—to lend the bare words their spirit of clamorous music:

"We-must-be-off-to-beyond-to-the-place-where-the-bergs-are-born!"

As the Old One hearkened and watched so did all his company until, even to their keen eyes, white flock was lost against white cloud, and like the shade of an echo they caught the last faint fragments of that flight song:

"To-the-bergs! bergs! the-bergs!"

They rose in turn, the Old One and his flock, to circle the blue lake twice, as though regretfully. The pelicans pottered at their fishing. The herons were at their posts. Darting, glancing, twisting, bands of snipe flew low along the marge, and on the sward the awkward bittern danced again. The great rafts of ducks had thinned, and the smooth water was traced everywhere with silver lines where paired birds swam. And the day was half drowsy, as though bemused with its own warmth and color. It was time to leave Lake-That-Is-Far-Enough. Chanting they ascended to the lane of migration, and chanting they followed the snow geese into the North, whence April beckoned to the flock.

To Be Concluded

In the February issue of NATURE MAGAZINE *Mr. Lampman will write the conclusion of his romance of the air lanes. As announced elsewhere, the first article on the Association's northern expedition will appear. Other articles in the February issue will include the work of several newcomers to our pages. Roy M. Allen will present a fascinating story of the microscope and what can be seen through it; Hugh Stevens Bell will write the chronicle of Bubo and his nesting time; Earl Douglass will take us to a strange Goblin City that Nature has fashioned in one of her playful moods.*

Mr. Kangar And Mrs. Roo

By-Lorene Squire

PHOTOGRAPHS BY THE AUTHOR

AND THIS IS MR. KANGAR HIMSELF

His tail is a long banner with a fluff of gray at the tip and his forepaws are exquisitely tiny.

IN Oklahoma there is a land of sand hills where soapweed, scraggly cottonwoods and coyotes thrive. Here in the star-jeweled Oklahoma night a race of fairy people come to dance and carry away the sunflower seeds, dainty little creatures with great dark eyes. The fur of their back is brown shading to smoky gray close to the body. The breast and throat are snowy white. There is a long banner of a tail with a fluff of gray at the tip and the most exquisitely tiny fore paws that you ever saw. They hop about like prancing bits of thistledown on their long hind legs but when dawn comes they have vanished, leaving only a delicate tracery in the sand.

Joe Kelly would tell you that these fairy people are kangaroo rats and along with chinch-bugs and coyotes they are the affliction of his life. You see, last spring Joe prayerfully planted watermelon seeds. The next morning they were gone—a maze of dainty tracks left to tell the story. Joe swore vehemently and planted again and again by morning the seeds were gone. Joe raged. This time he planted poison. The rats gaily avoided it. Again he planted seeds and yet again the rats carried them to their burrows. Joe was Irish but he began to be discouraged. Then he conceived the idea of digging the kangaroo rats out of their homes. For a whole morning he worked digging repeatedly a goodly distance in the direction of a Mongolian empire. But the dwellers of every burrow escaped by a back entrance, dug down through the sand or bounded fifty feet away before the slow farmer could even turn around. Joe was on the verge of apoplexy.

But there was a tinge of Scotch in Joe's make up and gradually he began to master the art of catching the kangaroo rat. By trial and error method he learned in general what hole to follow in the maze of passages and how to grab a rat in mid air at its first jump. He learned to start digging always at the entrance lately plugged with sand, for this leads to the grass lined nest chamber. And so Joe took these exquisite little people away from their sand hill home and shipped them to zoos, universities and museums, thus realizing a better profit than from his watermelons.

THE AUTHOR AND HER PET

Miss Squire loves all her varied pets and, happily, knows how to write charmingly about them.

In a burrow in this country Mr. Kangar was born and not far away Mrs. Roo came into this world, each one of a family of two. By the middle of the summer they were taken out into the night and taught the way of gathering seeds in their cheek pouches; how to go at high jumps over the bayonets of the soapweed, and that coyotes were things emphatically to be avoided.

Under a glad spring moon Mr. Kangar and Mrs. Roo met and plighted their troth. Together they worked in

the cool sand, digging with their white paws. When day came they labored underground. At last the burrow was completed and together they searched for bits of grass and gay bird feathers to line the nest chamber. Time went on and the occupants of the burrow numbered four.

One morning after having dined on sunflower seeds and young cactus plants Mr. Kangar and Mrs. Roo curled up for their day's sleep, Mrs. Roo close to her two precious babies. Overhead they heard a queer crunching sound. They trembled. Sunlight poured into their burrow. Mrs. Roo took her two wee babies one under each arm (at least that is what Joe Kelly told me). Together they ran, Mr. Kangar leading the way. Joe caught them both and put them in a sack. The two baby rats were dead. He had crushed them in catching the mother.

Joe boxed the pair up and shipped them to me. The old spiny cactus near their home burrow missed the fairy patter of their little feet. Poor Mr. Kangar and Mrs. Roo were not there to dance to the eerie tune of the coyotes' yapping chorus. The moon that night looked [illegible] lonk shallow hole. Soon even this disappeared, [illegible] vind blown sand. The tenants had gone.

I languidly answered the telephone one morning.

"Come to the office at once," howled Dad over the wire.

"Wh-why?"

"Your confounded pets have arrived and the little fellows are out! Jumping all over the place."

I hung up the receiver, rushed to the car, broke every traffic regulation that our small town can boast and whirled into Dad's office. Papers were strewn over the floor. A chair had capsized. Dad appeared to be making his most successful attempt at the Charleston. I discovered that he had caught one of the kangaroo rats and it had run up his sleeve. The frightened little creature refused to come down and Dad was intensely annoyed.

The business's only office boy was whanging his shins and now and then giving his head a bump in an effort to catch the remaining kangaroo rat. But Mr. Kangar did not plan to be caught. He ran close to the floor, jumped, hid under things, dodged and ducked while the office boy ruined himself and the business's furniture. Then Mr. Kangar jumped on a desk near me and I gently closed my hands on him for he was just too tired to move.

"WELL, HOW ABOUT IT FOLKS"

Mrs. Roo demands to know why her slumbers in the comfortably curved tea cup should be so rudely disturbed.

I put him back in the box. The other kangaroo rat was digging into Dad with all four feet. Dad was disgusted and grieved and horrified and pained. To think that his daughter should be responsible for such a thing! I reached my hand a little ways up Dad's cuff and pulled out the struggling Mrs. Roo. Then before Dad could regain breath I left the disheveled office taking my pets with me.

I did not have the energy to be courageous that morning so I took Mr. Kangar and Mrs. Roo in by the back way and there, of course, I met the person I most dreaded.

"Now what," said Katy, "have ye there?"

"Nothing at all—that is —well—nothing of interest to you. I'm certain of that."

"Is it a prairie dog?"

"Katy, I couldn't!"

"Hmm—or one of thim pole cats?"

"Oh, no!"

"A birrrd?"

"Katy, it's a pair of the most precious little creatures that you ever saw. You'll adore them."

Katy was dubious but in sudden kindness she hunted up the box that long ago Cutie, the prairie dog, occupied. An ice box shelf was again to serve for a lid. I gently lifted Mr. Kangar and Mrs. Roo into their new home.

"Rats," wailed Katy, "Almost rats anyway. I won't live in the same house with 'em."

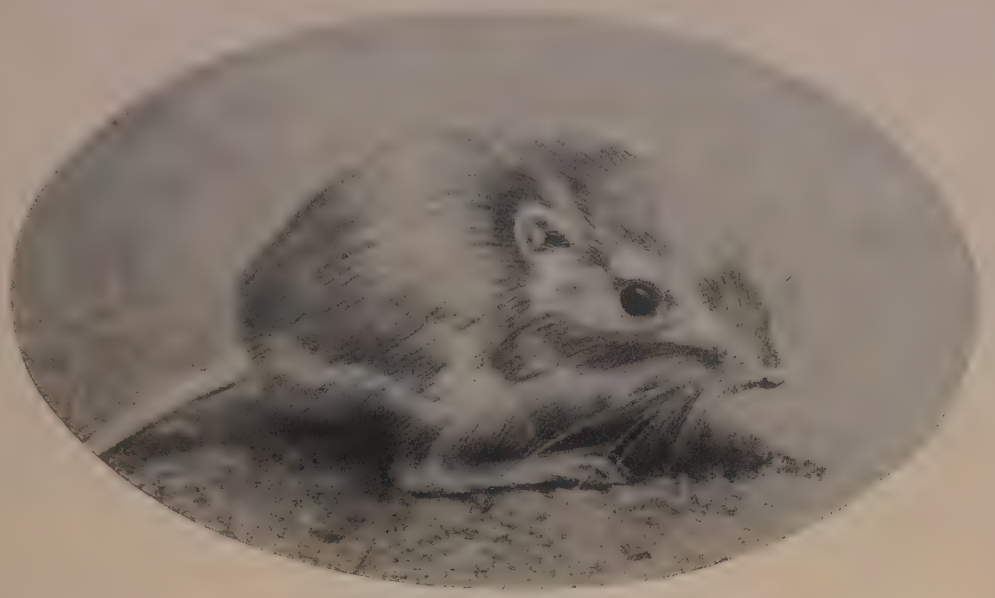
Mother rushed in to see what was the matter. "They or me leaves," affirmed Katy.

But mother quieted Katy in her miraculous way and the régime of the kangaroo rats began. By evening everyone except Dad had fallen in love with Mr. Kangar and Mrs. Roo—even, wonder of wonders, the cook.

"The darlin's," she crooned. "It's a shame to call ye by such an abnoxious name as rat. Little faery things ye are, every bit of ye." And she put in her big hand and stroked Mr. Kangar's gossamer fur.

Even little brother brought the Boy Scout troop over to see Mr. Kangar and Mrs. Roo. They spoke in whispers, afraid lest they frighten such elfin creatures. But Mr. Kangar and Mrs. Roo were bored by all this attention. They let it be clearly understood that they were sleepy. Hadn't their fathers and all their great grandfathers slept in the day time? And here these absurd giants were keeping them awake. So Mr. Kangar and Mrs. Roo huddled in the darkest corner and dozed. When I put straw in their box they leveled it all down with their little white paws and then slept again.

The next day I coaxed Mrs. Roo and then Mr. Kangar to eat grain from my hand. They filled their cheek pouches till they bulged making their heads bigger around than their bodies. Their fore paws worked so fast getting the grain that they were only a blur. Also in drinking they took the water in their tiny cupped-up hands to their mouth.



MRS. ROO IN THOUGHTFUL MOOD

Unfortunately her tail is far too long so you will have to imagine where it goes after it leaves the picture.

Mr. Kangar, of course, felt that he should be storing up grain for the winter's food supply — the kangaroo rat does not hibernate. So he conscientiously put a portion of the food I gave him in a corner under wisps of straw. But Mrs. Roo was not conscientious, she didn't think of the future and she had never heard of saving. The minute Mr. Kangar was four inches away from his food cache Mrs. Roo whisked it and filled her pouches. Mr. Kangar regarded her sadly but made no move to protect his treasure.

One day Mr. Kangar did not empty his pouches. A half hour went by and Mrs. Roo could stand the strain no longer. She decided to browbeat Mr. Kangar out of his rightful property. She chased her poor husband around and around in the box. Then although I had never thought of Mr. Kangar as a worm, he decidedly turned. He boxed Mrs. Roo with his forepaw, then made a running jump and kicked her soundly with his two hind feet. A boxing match ensued with Mr. Kangar as the winner. But five minutes later he emptied the grain from his pouch with a sweeping motion of his hand and in less than two minutes Mrs. Roo was eating it. This was their only quarrel.

Dad and I read many books together and often I took my kangaroo rats into the library. They had the time of their lives. Mr. Kangar perched in the middle of the floor and gravely surveyed Dad. Finally he skipped around to the back of the overstuffed rocking chair, scrambled to the top and perched on Dad's shoulder. Dad was too preoccupied with "Golf Without Tears" to pay any attention. Mr. Kangar hopped down Dad's arm and on to the pages of the book where he calmly proceeded to wash his tail and then his little quivering nose.

"Well, little fellow, where did you come from?" chuckled Dad.

Mr. Kangar's innocent eyes sparkled; then he hopped mincingly down and curled up between the cushion and

the arm of the rocker and fell asleep—a tiny ball of fawn-colored fluff. And so Dad forgot forever his grudge against the kangaroo rat.

Katy conceived the idea of letting "the darlin's" hop about on the screened-in porch at night. There I put a box of sand for them to play in. One morning we thought they were lost. The whole family hunted madly in every nook and corner. Then mother caught a movement in my flame colored bathing suit that I had carelessly hung on the door knob. She lifted off my bathing cap and there was Mr. Kangar's tail extending out one arm hole and Mrs. Roo's pert little nose out the other. It was the dearest sight in the world. Then I noticed that the two had cut with their sharp little teeth about seven square inches out of the bathing suit. So I put them back in their box and made them a present of the flame-colored garment. They spent the rest of the day gnawing this into tiny squares.

Another time that we searched for the missing Mrs. Roo, Katy found her sound asleep in a rose-colored tea cup on the breakfast porch. One night Mr. Kangar chewed a hole in the screen and hopped away. Mrs. Roo could have followed but for some reason she did not.

She seemed so lonely there huddled amid the bits of flame-colored wool that I carried her to my desk. There she waxed enthusiastic over the cubby holes. Before I knew it she had chewed up enough postage stamps for fifty letters. Mrs. Roo stood for a long time watching my hand glide over the paper. She edged closer and closer, rushed up and lightly touched my finger tips with her little bewhiskered nose, then looked up at me shyly. My breath stuck in my throat. She was *too* adorable.

The sound of my typewriter drove her into a panic. Those little transparent ears could not stand the banging. So I put her down in the box that I now kept close to my feet. But always when I wrote with pen or pencil Mrs. Roo was there to make rushes at my fingers and demolish my postage stamps.

Dad missed Mr. Kangar from his old arm chair when he read at nights. And Mrs. Roo did not approve of Dad—if he attempted to pick her up she scratched him. Often, between chapters, when Dad thoughtfully smoked his pipe, he wondered what had happened to Mr. Kangar—was he in the garden or had he gone far away?

One afternoon after a rain I saw a little fluff of fawn color go bouncing across the lawn. I rubbed my eyes and looked again. Yes, it was Mr. Kangar. Just then brother and his pals came warwhooping around the house and Mr. Kangar raced to the flower bed. I found there the entrance of the burrow. Around it I scattered a goodly amount of grain and in the morning it was gone.

One day I decided that Mrs. Roo seemed wistfully unhappy. I offered her watermelon seeds and she paid no attention. When she refused postage stamps I became frantic. She must be longing for Mr. Kangar. So that evening I put her near his burrow, whereupon she gaily scurried into it. I did not weep but I admit that I wanted to for I loved the fairy-like Mrs. Roo with her captivating ways.

I wandered disconsolately in the garden. How easy it is to love any fragile beautiful thing that is warm and cuddly and oh, so tiny! For a long time I did not care to write just because I missed Mrs. Roo from my desk.

Every day I put out grain and watermelon seeds for Mr. Kangar and Mrs. Roo. In the sandy loam of the blackberry patch they have made another burrow. Near it I have planted a soapweed to remind them of their sand hill home. A little screech owl quavers nearby and cats slink about on the premises but Mr. Kangar and Mrs. Roo seem well able to take care of themselves.

At night, I know, they patter out into the garden and dance as they did long ago under an Oklahoma moon. In the morning I find the fairy traces of their wanderings in the dust of the garden path. Now the glow of the harvest moon has come to the sky. Last night I really saw Mr. Kangar and Mrs. Roo skipping about in the garden—little bits of elfin fluff touched with the moon's silver. And I wonder if their great dark eyes sparkle with happiness and if they have found life in our garden as gay and free as long ago in the sand hills.

Tree Siamese Twins

AN interesting booklet has recently been published by the New York State College of Forestry of Syracuse University on the subject of the freak trees of the Empire State. It assembles a remarkable collection of grotesqueries among the woodland inhabitants and shows Nature in many playful and inventive moods.

Now comes this candidate from Nevada, Iowa, for freak tree honors. The illustration shows two interesting trees,—Siamese twins of [illegible], so to speak. On the right is a white elm and on the left, curiously enough, are red elms. The photograph was taken recently by one of our members, [illegible]

Another Queer Quink

Vey of Nevada. He tells us that the arch made by the junction of the trees is about seven and one-half feet tall. Old-timers, however, can remember when this arch was about three feet high, more than a half century ago.

Mr. McVey quite naturally is curious to know how old these trees might be, a secret that can only be told at the cost of destruction, and study of the annual rings. He wonders, too, what caused these trees to grow in this way. We suspect an injury in their youth, bending them together and bruising them, whereupon they both set about to repair the hurt together. What do you think may have been the cause?

Winds And Weather At Sea

By - Charles Fitzhugh Talman

PHOTOGRAPH U. S. COAST AND GEODETIC SURVEY.

"A GALE IS A GALE,"

says the skipper in Conrad's stormiest tale, "and a full-powered steamship has got to face it."

NO landsman who goes to sea—or stays home and reads Marryat and Clark Russell, Conrad and William McFee—can fail to be impressed with the observation that the sailor's ideas about weather differ materially from those prevailing on shore, and that he has a vocabulary peculiar to himself for discussing its doings.

On land we generally think of the temperature of the air as the most important element of weather. The ups and downs of the thermometer form the staple of our weather conversations, but it seems to be all one to the sailor whether the rigging is stiff with frozen spray or the deck is oozing pitch in the inferno of the Red Sea. The only meteorological instrument in which he takes much interest is one with which most landlubbers are entirely unfamiliar—the barometer. Both business and pleasure on *terra firma* are notoriously affected by rain and snow. The mariner is concerned with these things only in so far as they interfere with clear vision. "Thick" weather — due either to rain, snow or fog—is a vastly more serious matter on the seas than on the land. The state of the sky, whether clear or clouded, is a fact that governs the whole tone of the weather according to the conceptions of shorefolk, whose hearts are warmed by sunshine and chilled by the lack of it; while the sailor is quite content if he sees the sun long enough to get a shot at it with his sextant. Lastly, wind plays a far less prominent part in human affairs on land than it does at sea.

Indeed the seaman often speaks of "weather" when he has in mind nothing more than wind. "Dirty weather" suggests to the landsman the idea of rain and mud, but in nautical parlance it means a blow. The "weather" side of a ship is the windward side. To "weather" a cape means to pass it to windward, and to "weather" a gale means, properly, to lie to, with head to wind, until its fury is spent. On etymological grounds the sailor is justified in thus identifying "weather" with "wind," for the former word comes to us from a Sanskrit root meaning to blow. Even landdwellers apply the names "weather vane" and "weathercock" to a device for showing the direction of the wind.

PHOTOGRAPH U. S. WEATHER BUREAU.

"CAPE FLY-AWAY"

A sailors' name for a fog-bank at sea—the subject of many weird tales and legends.

The lore of the winds is richer and more picturesque

PHOTOGRAPH U. S. COAST GUARD.

"LIKE A SHEETED GHOST THE VESSEL SWEPT"

A Coast Guard cutter arriving in port after an encounter with the wintry waves of the Atlantic.

among sailors than among men of any other class. A host of nautical superstitions relating to winds and storms survived to a recent date, and some of them still flourish. Not so long ago the sale of winds, tied up bags, to credulous sailormen was a profitable industry, for which the Finns and Laplanders were especially celebrated. This remunerative business was still carried on at places on the English and Scottish coasts as recently as the middle of the Nineteenth Century, and probably exists in out of the way corners of the earth to this day.

Sailors, like other people, prognosticate winds and weather from the behavior of various birds and beasts, but they go a little farther than the rest of mankind in ascribing actual control of the elements to these creatures. The Ancient Mariner was reviled by his shipmates for shooting the albatross "that made the breeze to blow." We are indebted to the seamen of antiquity for the belief that kingfishers cast a spell upon the deep, so that calm weather prevails during the "halcyon days," about the time of the winter solstice. Old salts still object to the presence of a cat on board ship, because she "carries a gale in her tail." Clergymen are unpopular,

Sailors have not ceased to whistle for a wind, though the custom is less general than it was a century ago. Basil Hall, writing in 1811 of a calm at sea, says: "One might have thought that the ship was planted in a grove of trees, so numerous were the whistlers." Scratching the mast is another superstitious method, not yet extinct, of raising a breeze. Some nautical authorities say the foremast should be chosen for this operation; others prescribe the mizzen. Still another wind raising process is to stick a knife in the mast, with the handle pointing in the direction from which the wind is desired to blow.

At sea there are two distinct systems of describing the direction of the wind, while on land there is but one. The method common to sea and shore is to name the point of the compass from which it blows; but nine times out of ten the mariner prefers to indicate its direction with reference to the course of the ship—as "wind abaft," or "on the port beam," and the like. On land the force of a wind is commonly expressed in miles per hour (or meters per second outside of English-speaking countries). Sailors almost universally use the Beaufort Scale, in which there are 13 degrees, ranging from 0

WATERSPOUTS BY THE DOZEN

Seen near Stromboli, on the Mediterranean, June 28, 1827, and drawn by an eye-witness. From a lithograph in the Deutsche Seewarte.

(calm) to 12 (hurricane). In estimating the wind according to this scale due allowance must be made for the motion of the ship, and accuracy is attained only through long practice. The appearance of the surface of the sea is a great aid in the process.

One result of the substitution of steam-power for sails is that fog has become a much graver danger to navigation than it was a few generations ago. In foggy weather there is generally little wind. Hence sailing craft automatically slow down when they enter a fog, and when sails were universal collisions in a fog were very rare. A steamer is under no such natural limitations. According to the international "rules of the road," all vessels are supposed to maintain "moderate speed" in thick weather, but this rule is variously interpreted and often disregarded. The international rules also prescribe various fog signals, which vessels must make by whistle, foghorn or bell, according to circumstances.

In coastal waters foggy weather increases the danger of running aground as well as of collisions. If the waters are well charted, frequent soundings help the navigator find his way, and he is further aided by fog signals on shore, in the shape of sirens, whistles, bells (including submarine bells) and nowadays, above all, by so-called radio beacons. Acoustic fog signals of all kinds (submarine excepted) are famous for the varying distances at which they can be heard. A signal audible under certain circumstances at a distance of ten miles will, on occasions, be entirely inaudible at two; or, again, there will be certain zones or regions within a mile or two of the signal where no sound can be heard, while the signal is distinctly heard at much greater distances. These eccentricities are probably not due so much to the fog itself as to eddies and other movements of the atmosphere.

According to a well-known publication of the British Meteorological Office, "seamen's weather" includes only three elements of great practical importance—wind, fog and floating ice. The last of these pertains as much to hydrography as to meteorology, but its prevalence depends upon weather conditions and also exercises a great influence upon the weather of the world, through its effects upon barometric pressure and winds. Ice is more dangerous to steamers than to sailing vessels, on account of the greater speed of the former: and the tragic loss of the *Titanic*, through collision with an iceberg on April 15, 1912, proved that no vessel is big enough to be safe from it. Fortunately the vigilance of the International Ice Patrol, maintained by the United States Coast Guard, has made the North Atlantic steamship routes fairly safe from the grim menace described in Longfellow's well-known lines—.

"Southward with fleet of ice
Sailed the corsair Death***"

PHOTOGRAPH KEYSTONE.

A WATERSPOUT ON THE MEDITERRANEAN

The spout was about 1500 feet from the camera, and was estimated to be about 550 feet high.

Two other outstanding factors in marine meteorology require mention here. The navigator reads his barometer regularly; not because the pressure of the atmosphere affects his well-being in any direct way, but because its fluctuations afford a clue to coming storms and shifts of wind. The state of the sea—by which is meant the smoothness or roughness of its surface—is generally classed as a weather feature, because it is mainly dependent on wind. The seaman distinguishes between waves of two kinds. Those set up by the wind blowing at the time and place of observation are called "sea," while

PHOTOGRAPH U. S. COAST GUARD.

BLOWING UP AN ICEBERG

A charge of T. N. T. sometimes hastens the breaking up of a berg when it is already melting rapidly.

waves due to a distant storm or to one that has recently occurred in the vicinity of the ship are called "swell." The latter may often be seen, in the form of long, low, regular undulations, in the absence of any wind. There is a scale of nine degrees, ranging from "calm" to "precipitous sea" (in which the waves are forty feet or more in height) for estimating sea disturbance, and another one, recently adopted by international agreement, for estimating swell. Whenever tropical hurricanes are likely to be about the navigator keeps a lookout for an increase in the swell, which often gives the first warning of one of these storms, as the storm waves travel much faster than the storm itself.

Of all atmospheric phenomena observed at sea, the waterspout is probably the most interesting. A waterspout is a tornado occurring over a body of water; that is, a local whirl in the atmosphere, revealing its presence by the formation of a more or less funnel-shaped cloud, due to the condensation of moisture where the air expands, and therefore cools, in the core of the whirl. As this moisture comes from the air and not from the sea, it consists of droplets of fresh water, such as we observe in a fog; but at the base of the column a good deal of salt-water spray is dashed upward. Contrary to popular belief, the spout is merely a cloud, and never a solid column of water. Waterspouts occur over lakes and rivers, as well as over the ocean, but they are commonest over the seas of low latitudes, where a dozen or more are sometimes seen at one time. A spout rarely lasts more than a few minutes. Waterspouts are much less violent than tornadoes, but are quite capable of swamping small vessels. Sailors formerly fired cannon at waterspouts in order to dissipate them, and perhaps sometimes still do so, but this procedure is perfectly useless.

Nobody has profited more than the sailor by the discoveries of modern science concerning the winds and the weather. Formerly all storm winds were supposed to blow in a straight line. The fact that storms are really great traveling whirlwinds, though previously recognized by a few meteorologists, did not become common knowledge until toward the middle of the nineteenth century. The rules of "storm strategy," which enable the mariner to avoid the more dangerous regions in these gyrating wind systems, have gradually developed since that period. When the sailor had only his personal observations to guide him in locating a storm center and determining its movements the process was fraught with much uncertainty, but nowadays he generally has radio reports from other vessels and from points on land to aid him, so that he is in comparatively little danger of running into a gale without ample warning. The system of radio weather reports, maintained under the direction of official meteorological services, has reached such a point that on many ships weather charts are drawn day by day during a voyage. The latest innovation is the broadcasting of the charts themselves by radio from land stations.

Another striking development of the last century is the system of collecting weather records, or meteorological "logs," kept on thousands of vessels of all nationalities, and compiling from them statistics of prevailing winds and other matters relating to the weather and climate of the seas. The author of this great enterprise was the famous Lieutenant Matthew Fontaine Maury, of the United States Navy, whose Wind and Current Charts, published after 1850, earned him the title of "the pathfinder of the seas." These charts, by shortening the average duration of ocean voyages, saved many millions of dollars a year, besides contributing notably to the safety of navigation. The monthly Pilot Charts now issued by the United States Hydrographic Office and similar publications issued abroad, which contain a great fund of information concerning winds, currents, ice, fog, derelicts and other matters of interest to mariners, are the continuation of Lieut. Maury's pioneer undertaking.

The author of this article has been a cowpuncher, forest ranger and always an outdoor man with an affection for things that grow and run and fly.

THE LARGEST OF THE YUCCAS
The San Antonio Bonita puts forth the largest bloom of the Yuccas in California.

The Glorious Yucca

By Arth Shay

(PHOTOGRAPHS BY D. P. ALEXANDER)

Mr. Shay says of himself: "Though not a botanist, I have always botanized; though not a poet, I have often been poetic. I love the land of flowers."

CALIFORNIA truly is a land of flowers. Snow-flowers bloom in the high Sierras. Verbenas bloom in the sands of the beach. between the snow-flower and the verbena there are thousands of other flowers. each in its place and each blooming in its time. So many varieties of flowering plants are there in California. and so varied is their time of blooming that there is never a day when it is impossible to gather a bouquet.

Of all the plants that bloom in California there are few whose beauty rivals that of the flower of the yucca. This plant adorns the hillsides and the valleys in greatest splendor; and even though it chooses the poorest soil for its bed, it puts forth the largest bloom of any plant within the state. Of all the yuccas I have found, the largest and the most beautiful is the San Antonio Bonita which grows near the base of the San Antonio mountains between five and six thousand feet above the sea.

Strangers are invariably inspired by the flowering yucca when they gaze upon its beauty for the first time. Not without reason has it been called "The Lord's candle." Never does this plant cease to be a marvel for its nature is so strange; its way so queer. Coming from a small, black disk-like seed the yucca springs through the earth's crust and mingles with the floral covering of the landscape. From the beginning, Nature provides for its protection. Protruding from all sides and reaching heavenward, are sharp, sword-like leaves that have on their ends keen, hardened spears. Severe cases of blood-poisoning have sometimes resulted from contact with these spears.

Year after year the yucca grows larger. Year after year it gathers within its center bulb as much moisture as it can obtain. At last the plant reaches a circumference of approximately ten feet and a height of from three to five feet. By this time twenty-five seasons have come and gone; yet not till now has that center-bulb obtained sufficient moisture for the blooming period. But now a very rapid change takes place. The bulb begins to enlarge and to spread out at the crown. It forces out leaves that are, for the first time, warmed by the sun. These yellow-white leaves are the first sign of blooming. This causes the bulb to seem like a yellow-white stone in a light green setting. Only for a short time does this simile hold, for the stem soon appears.

This stem often grows eight or ten inches in twenty-four hours. For at least ten days, this rapid growth continues. By this time, the stem has attained its full height. I have often seen San Antonio Bonitas with stems sixteen feet long. During this period of rapid growth, small, white overlapping leaves cling to the body of the stem. As the stem's diameter increases, spaces

develop between the leaves until, at last, they are two or three inches apart. Now, for thirty-six or forty-eight hours, the leaves grow very fast. Falling outward and downward, they quickly harden into short, strong spears. And very necessary is this haste for during its unprotected and succulent growth, the yucca stem is a delicacy very agreeable to the taste of all vegetarian members of the animal kingdom including the not-so-vegetarian human species.

Many times when driving cattle across the mountains, I have seen them rush forward in their eagerness to devour the tender yucca stem, Many times I have watched deer as they ate out the sides of the tender stalk. I have seen the Indians (yes; and white people also) bake the yucca stems as sweet potatoes are baked; I have seen them sliced and cooked as greens are cooked. I have seen the raw stem eaten by the Indians or by hungry cow-boys.

After Nature has completed its plan for the plant's protection, blossom stems pop out from above the leaves on the parent stalk. Bell-shaped and hanging downward, these blossoms are white and beautiful. Open one of them and you will discover the prettiest, little world you ever gazed upon. Each flower has a perianth of six regular pieces surrounding six stamens each tipped with green. The plant might be called the queen of the desert.

In its manner of propagation the yucca is as singular as it is beautiful. Simultaneously with the blooming of the yucca the Pronuba moth breaks out of her cocoon. Stretching her wings at eventide she hastens to the blossoms of the yucca. The pollen is too thick to be carried by the wind, but this does not matter. The Pronuba moth gathers it from the tiny anthers, rolls it into a small ball and flies with it to the pistil of another blossom. Here she pierces the thick wall and lays her egg. Then she climbs to the stigma and places the ball of pollen in the funnel-shaped opening between its lobes. This process is repeated a number of times, usually once for each row of ovules. As soon as these ovules are fertilized, seeds begin to form.

THREE DIFFERENT TYPES OF BLOOMS

Nature provides the yucca with protection of sharp, sword-like leaves with keen edges.

From the egg of the moth, a larva or worm is hatched. Immediately it begins to feed upon the developing seeds. By the time the seed has matured, the larva has eaten its way to the crown of the pod. Bursting its way out of the pod, the larva fastens to the pod a silk-like thread that Nature bids it spin. In the spring, the parent moth flew like a fairy to the flower. Now the descendant of that moth returns to the earth by this silken thread. Burrowing the soil at the base of the yucca plant the larva of the Pronuba moth rests and develops and waits until it is again called forth by Nature to assist in the propagation of the yucca and of its own kind.

Some evening next spring Nature will summon her, and she will leave her cocoon that she may fly to the yucca blossoms. But she will not fly to the yucca that bloomed so gloriously last spring for the yucca flower stalk is dead. Only the dry stalk remains. Soon after that little larva had buried itself in the soil the yucca from which it had lowered itself to earth, turned its seed pods upward. With the coming of the first frost its pods had opened, that the winter might scatter the seed, and other yuccas might grow and bloom in the years to come.

From soil oftentimes so impoverished that it will scarcely support other vegetation, the yucca, through the mysterious working of Nature, draws the elements which provide the natives with many articles of economic value, and where beauty is rarest, rears its bells.

THERE ARE GROVES OF STATELY PALMS

In addition to being the most beautiful of the palms, these trees rank among the most useful. They are protected from wasteful cutting.

The Forests of Cuba's Everglades

By HUGH HAMMOND BENNETT

of the U. S. Department of Agriculture.

THE Everglades region of southern Florida has generally been supposed to be an American product without a rival. This notion must be revised. Within a few hours' ride of Havana, Cuba, it is possible to enter a region that not only duplicates all the interesting features of the great swamp at the southern end of the Florida Peninsula, but is one that has additional attractions to offer

This Cuban Everglades is on the south coast of the island, within easy reach of the capital, by rail, or by water from Batabano, the port south of Havana. It is known as the Zapata—the Shoe—or the Great Zapata Swamp. Its area is approximately eighteen hundred square miles, or more than a million acres. Like the American Everglades it rests upon a platform of coral limestone, and embraces vast stretches of peat bog and marl plains covered with sawgrass, resembling immense fields of waving grain. Large tracts of cream-colored marl like that southwest of Miami skirt the Caribbean Sea. In addition, there are areas of dense mangrove, thick tropical swampland woods, and strange rocky areas penetrated by myriads of cavities.

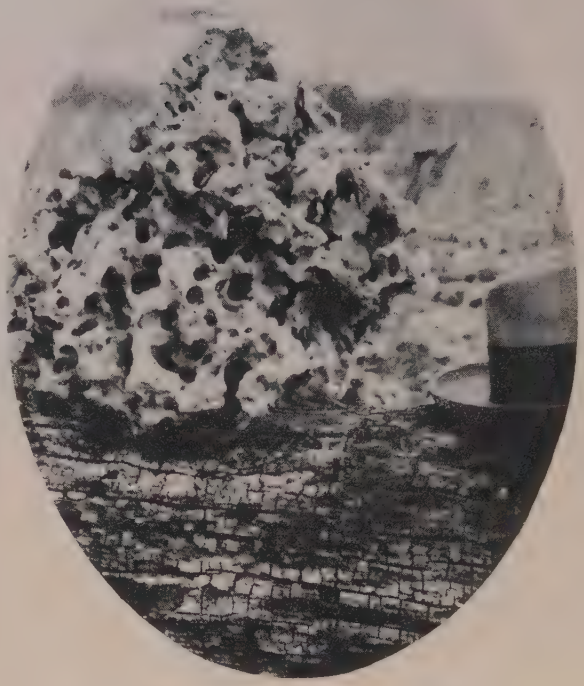
MANGROVE SWAMP IN THE CUBAN EVERGLADES

This section boast a wide variety of soil and interesting mixture of vine and tree growth.

One of the interesting features of the Zapata is the extensive area of cavernous limestone land, where, without a vestige of visible soil, silk cotton, or ceiba, trees four feet in diameter are growing. Florida has nothing precisely like this, although the limestone country south of Miami,

where one sees so many orchards of alligator pears growing on shallow coral limestone soil, is similar.

One area of this rock land, which in Spanish is called piedra hueco, or holey rock, is nearly fifty miles long. Here and there occur patches of red soil a foot or more in depth, but a large proportion of the formation is nothing but rock at the surface. Nevertheless, all of it is forested. Numerous large trees are found where it would be impossible to collect so much as a spoonful of soil from an acre of ground, except by burrowing into the frequent deep holes, some of which look as if they had been bored with an auger. These trees make their start in pockets and holes in the limestone where collections of leaves and slight accumulations of disintegrated rock furnish them with material for growth. Their roots wander about over the surface of the rock in search of food, finally plunging through holes to find sustenance in soil hidden in the depths of cavernous recesses within the coral stone.



STRANGE SOIL OF THE ZAPATA
The trees send their roots into this holey rock in search of food.

In places there are numerous projections of sharp-pointed limestone. Such areas are known as "dog tooth land." One must be careful in walking through these, as it is not safe to stumble where there are so many fixed bayonets.

Valuable woods are found on this coral formation, including the fine Cuban mahogany and Spanish cedar. A railroad has been carried across the swamp in one place from a sugar plantation, north of the region, to port on the Caribbean Sea. Many mahogany ties were used in the construction of this, and others are being hauled out for sale. Among the other woods are júcaro, ácana, rosewood, cerilla, ceiba, yana almácigo, and cecropia.

Peat bog is the most extensive land formation of the swamp, if it may be called land. This is covered with water most of the year and is always soft. In the latter part of the dry season it is possible to walk over the open glades by stepping carefully and avoiding the more soggy places usually covered with cat-tails and rushes. During the rainy season traveling becomes a process of flounder-

A PALM AND FERN PANEL IN CUBA'S EVERGLADES
Such luxuriant growth goes to make up the peat bogs of this rich forest section of Cuba described by the author.

ing through, the walker often sinking into the oozy mass to the waist or deeper. Horses, of course, can not be used. Care must be taken that the pervading sawgrass is treated gently. Attempts to thrash this plant aside are always rewarded with deep flesh cuts from the swordlike blades. Frequently the peat is ten feet deep, composed chiefly of the remains of sawgrass and mangrove leaves in various stages of decay. In many instances ninety per cent of the material is vegetable matter. This burns readily when dry.

Snail shells are everywhere, often completely covering the surface. At some levels through the soil layers beds of white marl are found, usually including numerous snail shells from the size of mustard seeds to an inch or more in diameter.

Streams rising in the peat bogs flow for short distances out into the adjacent rocky areas, then disappear into subterranean channels. These are known as sumideros. Their waters, coming up again, are supposed to account for the fresh water that boils up through the ocean like springs short distances off shore. Such ocean springs or "boils" occur off the coast of Florida also. It is said that ships formerly took on fresh water at the Devil's Punch Bowl, an ocean spring in Biscayne Bay.

The region is one of much interest to the naturalist. There is greater variety of forest within it than is found in the Florida Everglades, and along its borders are dense thickets of logwood and magnificent groves of stately royal palms. The latter, in addition to being the most beautiful palm known, is one of the most useful of trees. It produces the year round quantities of oily fruit, a favorite feed for hogs. The heart of the green top makes a delicious salad. Its enormous plume-like leaves are used for roofing and siding houses and for shading tobacco in the famous Vuelta-Abajo and Partito cigar districts. Cuba has wisely placed a heavy fine for unnecessarily cutting these stately palms. Cutting is allowable only where the trees stand in the way of needed ditches, highways and other improvements.

Within the glades are frequent pools of clear water starred with pink and white lotus. Here and there are clumps of shimmering palmettos, known as palma cana and yana prieto. These give variety to the otherwise monotonous stretches of treeless marsh. Near the margin are belts of mixed hardwoods and royal palms. This is true tropical wet-land forest, with lianas, climbing vines, and trees bristling with parasitic growth, including beautiful pink orchids. A vine-like plant, pendalata, covers acres of ground in the marginal forest, forming a wreathing, serpentine mass, utterly impenetrable except where a trail is hewn out with a machete.

A TYPICAL FOREST GROWTH

Royal palms, palma cana and hardwoods growth luxuriantly and in valuable quantities.

For generations the Zapata has been a favorite district for the burning of charcoal. Numerous small canals have been dug into the swamp through which to bring the product of the kilns out to sea, where it is put on small schooners and carried to market. The burners live in palm-thatched shacks for long periods of complete isolation, coming out only to market their product.

Charcoal is the national fuel for cooking in Cuba. Fortunes have been made in the business by large operators, working many crews of men, and maintaining commissaries in the swamp for their convenience. The small fellows, working singly or with a partner or two, usually make about the average daily wage for the island.

The charcoal burner is sometimes condemned as a waster of forests. The accusation is largely unjustified, for he operates chiefly in the coastal wastes, where tree reproduction is rapid. Compared with the wholesale cutting of the magnificent interior forests to replace impoverished cane fields, the damage done by the charcoal burner is trivial indeed. That more cane might be planted millions of feet of mahogany, cedar and scores of beautiful woods have been burned, while abandoned fields needing only cultivation for restored productivity have lain idle.

During the Spanish régime revolutionists often found sanctuary within the confines of the vast swamp. Once

inside, the Cuban was about as easy to find as the proverbial needle of the haystack. Pursuing Spanish troopers would go no farther than the edge, knowing that one unfamiliar with the region could easily be lost within a few yards of the margin. Then, too, there was the extreme difficulty of travel through the miles of peat bog and soft marl, and the ever present possibility of abrupt demise by a blow from a machete suddenly flashed from some mysterious hiding place.

Crocodiles of huge size are plentiful, as well as a great variety of water fowl. Some of the streams heading in the swamp afford excellent fishing. Mangrove snappers and tarpon abound in them. The hutia, a tree-going, rat-like animal is found in large numbers. It is several times the size of a rat, and roasts to a most succulent dish. Deer introduced from Europe on the old Spanish estates are fairly numerous. Boa constrictors inhabit the dry forests of the limestone sections, making their homes in the cavernous rock. Some of these are reported to be of large size. They are harmless, as their normal food is bats. One is sometimes kept as a rat catcher for house and corn crib.

In November and December mallards and blue-winged teal come down from the north, but usually leave by February. The yaguesa, or whistling tree duck, is sometimes seen. Parrots are abundant along the south shore. White and blue herons are plentiful, and egrets are seen occasionally. Mocking birds sing gaily about the shacks of natives living here and there through the rocky areas, and a songster with notes somewhat like the North American wood thrush enlivens the shadowy depths of royal palm swamps. Since much of the region is without economic value, there is opportunity for establishing an important reserve for wild life. The isolation of the interior areas and difficulties of travel combine to afford considerable protection.

To the north and west of the Zapata lies one of the great areas of the famous red soil of Cuba, the Matanzas Red Plain. This region is occupied by one of the most remarkable soils of the world—red soil that shows no visible change from the surface to depths of twenty-five feet or more.

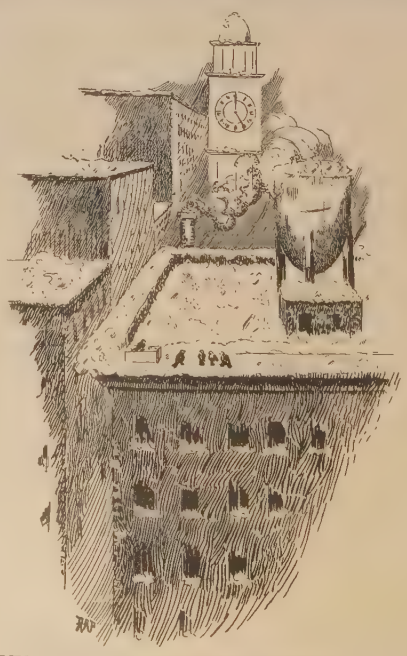
The texture of this is finer grained than the average clay of the United States, yet the rainfall, amounting to seventy inches annually, is entirely absorbed, passing downward through the ground. So rapidly does it percolate that plowing can be done within a few hours after heavy downpours. Despite this thorough sub-drainage the soil conserves sufficient moisture to produce fine crops of sugar cane.

Much of this land has been in cane continuously for more than a hundred years, and is still producing. Some fields which have not been replanted for twenty years are giving yields of twenty tons of cane per acre without fertilizer. It is difficult to understand how land subjected to ages of leaching, as this has been, retains its fertility. It has but slight stickiness, and is entirely different from clay soil, as known in temperate zones.

In the eastern part of this plain, there is an area of three hundred fifty thousand acres that has not a single stream or drainage depression in it, although the rainfall is heavier than in eastern United States. This section largely lies below the fifty-foot contour line, and is so nearly level the eye is incapable of detecting its slope of only two feet to the mile. The water goes down instead of running off, hence there is no erosion and no necessity for stream channels. The country, however, is perfectly drained despite any of these apparent disadvantages.

For a Little Bird

by A. W. Hutaf



SWIRLING smoke lashed by the north winds. Flakes of snow, smudged before they fall—roofs of buildings of commerce rising, rising story upon story. Hard, angular lines. The promise of a night of steady snowfall. The light grows murky, the snow and smudge shuts off the city view even a block away. Not a time or place to remember or care for a sparrow.

But there on the roof of a sky-scraper, the sooty snow piled up from the last storm, comes the elevator man. Right to the ledge he walks and stoops and plants some hand carved decoys of birds and on a box some bread crumbs for a chance weary bird buffeted by the storm in hope that it will see and be fed—away up—sixteen stories on a roof when in an hour all noises of commerce will have ceased—all lights out. A meal for a little bird in the city that has no heart.

"WHICH END DO YOU WANT TO EAT?"
In the meantime the lady beetle is meekly and busily nibbling away on the banana.

THE TRUTH ABOUT HERCULES

By Paul Griswold Howes

(PHOTOGRAPHS BY THE AUTHOR)

WHO are those strange-looking nosey fellows discussing the question of bananas? Why, of course, every naturalist knows them, they are the famous Hercules beetles *(Dynastes hercules.)* Many have marveled at their grotesque form, and there are few museums whose insect collections do not hold forever a number of these strange insects. Although they may be seen there, and bought in the dried state from many dealers, there are few who have had the chance to study them under natural conditions, where they are reared and where they live their blundering lives and where they die. Such absurd things have been said of them, and of the uses of their lobster-like "claws," that it would seem that very few have visited the life haunts of these creatures.

A MIXED BUT CONTENTED GATHERING
Here are snakes, geckos, Anolis lizards and two Hercules beetles living together without fighting.

In Ober's excellent book, "Camps In The Caribbees," there is an amusing reference to the Hercules beetle. It states that the "claws" are used to saw off branches or twigs of certain trees. According to the natives that Ober interviewed, the beetle comes to a certain twig and there fastens its long pincers about the wood. It then spreads its powerful wings and commences to fly with great rapidity around the twig, finally sawing it off entirely at the de-

sired spot! Why such a procedure should be followed, the natives did not state and it is not likely that there is any truth in this strange explanation. Sap is undoubtedly the natural food of the beetles, who will come to wounded and bleeding trees of certain species.

It happens that I am host to four Hercules beetles. I brought them all the way from Dominica, their home, through the chill of a very cold landing in New York, and to my own home. They are safe and sound at this writing and very much alive. I have found that in bringing home animals of all kinds, that it is better to keep them a little hungry than overloaded. Under such conditions they stand a much better chance of surviving.

Once established in their new home, they provided me with a problem, that of feeding. Ripe bananas solved the problem. At first this diet appeared strange to them and they would have none of it. In a few days, however, the pangs of hunger were too sharp and they tried the sweet fruit. One taste was all that they needed, and from then on there was no trouble with their menu.

How they will eat! I feed them every three days, or, really every six days. It takes the four beetles three days to account for one banana. This feast is followed by three days without food, and then they are given another fruit.

Not a particle of the banana is left after three days, and although their table manners are not of the best and they smear themselves thoroughly and horribly during the repast, they come out of their gorge quite slick and clean, eating the particles that remain clinging to one another, just as puppies lick the milk from each others muzzles.

In Dominica my beetles came to me at night in most cases. When the sun had gone to rest, and the strange sounds of Dominican night life echoed loudly through the surrounding forests, our oil lamps brought many a weird creature to our tables. Occasionally there would be a deep booming like the sound of a far distant aeroplane, and then from somewhere out of the night would come a great Hercules beetle landing with a roar and commotion upon the window ledge or door sill. Settling its wings at once beneath the iron-like elytra, it would peer about for a moment and then, like all insects, it would start directly towards the nearest lamp.

One of the strangest facts about these beetles, is that the females seek out the males. After we had two large males in a wire cage, two females came directly to the enclosure where they were readily captured. This is not always the case, however.

It was quickly observed that the great "claws" of the males serve a single purpose, or possibly two. The main purpose is undoubtedly for offense and defense, as a great deal of fighting goes on, not only over the females, but also over de-

HERCULES GOES CLIMBING (Right)
He deftly mounts a twig like an accomplished performer in vaudeville.

(Below) **HERCULES HAS DINNER**
This photograph shows the beetle a little more than one-half life-size.

sirable feeding areas. Two of my males fought desperate battles at times, remaining locked in a most impressive grip for an hour at a time. One of them finally succeeded in puncturing two large holes through the other's armor where the teeth that line the "claws" were pressed towards each other.

This implies a considerable amount of strength and injuring ability, as one will readily see upon examining the extremely hard surfaces of the insects outer wings.

These fights went on until one male was finally worn out. One of his legs was broken off and he was badly punctured and finally died. Occasionally the entire head and thorax bearing the "claws" is torn off by an antagonist. This is not remarkable as the whole thing is rather loosely joined to the rest of the body.

The beetles which I found in January, February and March were not of very great size. Later in the season they appeared in greater numbers and at this time they were larger. At such times, they occasionally collected in swarms about a certain central lure, which in one case was a palm tree, known by the natives as a Sago palm. The insects began to arrive in the late spring and each day saw more and more of them collecting at this spot.

The lure was undoubtedly the mating urge, but the remarkable fact was that an actual army of the insects gathered to take part in a general wedding of the race. Not all was joy for those who came here, alas! The battles that raged were long and fierce and the grass about the palm tree was strewn with heads and claws and broken limbs. Those who won out undoubtedly took their pick of the lady beetles, and possibly lived happily, if not forever, afterwards.

Just what went on in the upper part of that tree would be hard to say definitely, but I suspect that the eggs of the insects are deposited there. The larvae or young beetles are huge white grubs like those of the rest of their family, but I have not had the opportunity to study the life history.

There is one more fact of interest. Lining the under side of the upper "claw" is a stiff growth of reddish-brown hairs, set very closely together, so as to form a mat. I believe this to be a special sense organ. At any rate, one from which I shaved this hair had difficulty in finding things, while the ones that were left untouched found both their food and their mates with great ease.

Domesticated Mallards

By Jess Linkletter

WHEN all the north and the east is in the grip of winter and ponds and feeding grounds are frozen over, the warm blue sky of the Imperial Valley in southern California is filled with long lines of slim cranes, with V-shaped flocks of honking geese, and with hurrying bands of noisy ducks.

DOMESTICATED MALLARD DUCKS

With "true sportsmanship" these tame ducks were used during the hunting season to lure their wild brothers to the blind, and death.

Here they come year after year to winter near the Salton Sea or to rest and feed on the banks of the Colorado River. If too many death-dealing hunters appear they fly farther south to Lower California and the Gulf.

Among the ducks appear the mallards;—the male with his head of pretty green feathers, iridescent and beautiful; the female clothed in inconspicuous brown with here and there a feather tipped with white.

They feed on mollusks and marine insects but when these are not to be obtained they enjoy the same food as the ducks in the farm yard. They gobble greedily the crickets and spiders floating in the water when the farmer is irrigating. They puddle and roughen the smooth wet soil and scatter or consume the freshly-sown seed.

As is usual with many of the ducks they do most of their feeding in the morning or after dusk and spend the greater part of the day sleeping. They generally get their food by tipping in shallow water and it is a funny sight to see one almost standing on his head in the low muddy waters near the shore of the Salton Sea.

They nest on the ground among the reeds or marshes or in the tall grasses of bordering fields. A farmer's wife living near the south end of the Salton Sea gathered some of the eggs and placed them under her setting hens and was soon rewarded with a nice flock of mallards so tame they would come at her call like domestic fowl.

A PLEA FOR OUR HAWKS

By Edward A. Preble

THE skill, daring and intelligence of hawks early excited the admiration of man, and the arts of the early Persians and Egyptians testify to the antiquity of falconry—the capture of game by trained hawks. Its practice in China, India and other eastern countries also predates the written record. From these lands falconry spread to Europe, where by the ninth century it was a fashionable sport. Royalty and nobles of all ranks gave to it an important place in their lives, and each group of the more favored hawks was dedicated especially to a certain grade of society. The peregrine, a bird found in some form in nearly all countries of the earth, was the typical and favorite falcon. Around the sport there grew up a language of its own, and attitudes, costume and part of the land bearing a peculiar name. From those early times to the present falconry has never quite died out, and there is at present in Germany an organization which seeks to protect these noble birds and to revive the fast-failing interest of the ancient sport. While it is manifestly impossible in these days to restore to its former high position the sport of kings, yet we welcome any move to encourage the protection of these interesting species.

Many years ago, when I was a boy in eastern Massachusetts, and my principal companion was intimately Nature's varied and endless panorama as it unfolded itself through the seasons, I used to see each autumn the [illegible] flocks of migrating hawks [illegible] through the bay opposite our home. They came in sight from the direction of the shoreline and across a patch of wood-crested meadow. Each autumn, about the same week, by beyond sight in the blue heavens, and disappeared over the top of a glacier-scarred hill toward the southwest. Usually they passed over, rustails and red-shoulders, with a sprinkling of broad-wings and many of the smaller species, the larger ones often pausing to circle a few times, the smaller usually scurrying by with hurried wing-beats. From the general direction of their flight-line I used to picture them as already perceiving the necessity of striking direct for the shores of New York Bay to avoid crossing the open ocean to our south. Now, looking back over the years, I appreciate more than I could then realize the privilege of being permitted to observe those south-flying bands of earlier days, for it is unlikely that I, nor my children, nor their children, will ever see the like again.

In those days hawks in the popular mind were either hen-hawks or chicken-hawks, according to size, and in the opinion of the poultry raiser lived almost exclusively on the barnyard fowl. To those interested in shooting, either for sport or gain, for market hunting was then regularly followed as a part-time occupation by many, game was supposed to be the hawk's staple food. In other words, he had few friends among those who had power to do him harm. Still, the wilderness was relatively broad, and opportunity to kill him came seldom, and so were possible the yearly migrating bands. And in spite of the thronging thousands which one might see each favorable day in early autumn, the farm yards were full of domestic fowls, in each patch of woodland was a "bevy" of the finest wood-fowl in the world, the ruffed grouse, quail nested in our home mowing field, and each evening in its season, the love-song of the woodcock could be heard in a marshy thicket across the road.

A BROOD OF YOUNG MARSH HAWKS

This is the only one of our species that habitually nests on the ground.

But even in the days of which I speak, a few earnest students were collecting evidence in favor of the hawk. In a bulletin published by the Biological Survey in 1893, and based on the examination of stomach contents, was presented a mass of evidence, since supplemented by further study, that should have insured a favorable verdict for most of our hawks, in any court. Very briefly, these studies, based on ample evidence, show that twenty-five species, from their wholesale de-

struction of harmful rodents and insects, are largely or entirely beneficial. Of these the Swainson and rough-legged hawks, with practically no bad habits, head the list. Several, including our national bird, the bald eagle, are neutral, as far as man's material interests are concerned. In contrast to these are a few species whose habits are mainly detrimental. The more common of these are the goshawk, Cooper's hawk, and sharp-shinned hawk, which are mainly destructive to game or small birds and to poultry, and of which the exploits are largely the cause of the popular prejudice against all hawks. The duck hawk, or American peregrine, perhaps our most beautiful and interesting species, falls into this class.

Space will not permit, nor is it desirable in the present connection, to present the data on which these statements are based. The details, however, have been widely disseminated among farmers, sportsmen, and others interested in our wild life. Should not the result have been a cessation of that persecution which was formerly, in a way, justified on the ground of ignorance? Yet in spite of the evidence in their favor all our hawks continue to suffer at the hands of our vast and increasing army of sportsmen, virtually without exception. Because a few species sometimes kill game birds, the entire class is condemned.

PHOTOGRAPH E. A. PREBLE

NEST OF OSPREY ON A NORTHERN LAKE

Always built near water, it may be seen either in settled communities or in the wilds.

There are those, and they are many, who fail to see that birds of prey fill an important part in the great scheme of Nature. Does the hunter who shoots down the hawk at every opportunity, because some species occasionally captures what he is pleased to consider his special property, ever stop to ask himself what caused the quail and other non-migratory game birds to attain those powers of swift flight which alone make them desirable as objects of sport? It is the bird of prey, pursuing the other since the days of their creation, which has developed not only its own strength of wing, but that of its quarry. And just as surely as this is true, so truly will that power be lost if the contributing cause be removed. The Dodo, a pigeon, found himself on the island of Mauritius where enemies were unknown. He yielded to gluttony and inaction, developed a corpulence that forbade flight, and was eaten from the face of the earth within a short time after his discovery by man. His relative, the rock dove, who had to escape the pursuing hawk or perish, developed and still retains a power of wing which is famous the world over. In the same way several other species, notably some of the rails, by adopting a care-free life, have forfeited flight, and now face extermination whenever any active enemy invades their haunts. The very hawks which we are now exterminating have made our grouse and quail what they are. The great value of hawks in the removal of game birds suffering from contagious diseases is also recognized by close students of the subject.

A little thought should convince anyone of the fallacy of the argument that the lessening ranks of our game birds have been the result of depredation by hawks, a theory that has been the basis of most of the prejudice directed toward them. If this were well-founded then the decimation of the predators would have resulted in an increase in game birds. In truth both hawks and game have decreased simultaneously, and from the same primary cause.

As an instance of the destruction of innocent hawks under mere suspicion, there may be cited an item just published in the report of progress of an investigation of methods for increasing quail. Upwards of thirty marsh hawks were frequenting roosting places in the game covers, and about half of these were shot. Then over a thousand of the castings of the birds were examined, each representing a meal, with the result that the remains of four quail were found, while more than nine hundred meals had included one or more cotton rats, which eat the eggs of the quail. Indeed the statement is emphasized that most of the enemies of the quail are also the destroyers of its foes. This instance illustrates the complexity of a problem which many have the assurance to settle off-hand, even when their answer means the extermination of the species under suspicion.

There remain other phases of the subject which deserve more than mere mention. In a few of our states, from a mistaken devotion to the supposed interests of the sportsmen, virtually all hawks are classed as "vermin," a term which should not be applied to any creature so highly organized as a hawk, and all legal protection is removed. In several other states, certain of the destructive hawks are the victims of bounty laws, while most of the species are entitled to the same protection that is accorded to other beneficial or harmless birds. But we have yet to hear of anyone being prosecuted for killing a protected hawk. On the contrary thousands of hawks supposed to be under protection are killed, and bounties are paid for their scalps.

Even our national bird, the white-headed or bald eagle,

the sight of which, free and unafraid, should be a source of sacred pride and inspiration to all citizens, is frequently shot on the plea that it destroys wild ducks. As a matter of fact it is virtually impossible for such a bird to capture an uninjured duck, and practically all secured are cripples which have escaped immediate death by gunshot, but which are slowly dying from their wounds, or from starvation and exposure. Many of the game birds eaten by other hawks are captured under similar conditions.

Next to the eagle in size and grandeur of flight is the osprey or fish-hawk, a bird of very wide distribution. True, it lives exclusively on fish, and therefore would be banished from the earth by some short-sighted persons, because of its occasional capture of a trout or salmon. Yet the usual food of the bird consists almost entirely of commoner fish, and we can spare it a livelihood in exchange for the sight of its inspiring maneuvers as it poises in the air above its prey, descends with a rush and plunge into the water, and if successful bears its quarry away to its young. It builds its massive nest usually in a tall tree, but even on the ground in certain protected situations, and often in fields near occupied habitations in thickly settled districts, as well as on the shores of lonely northern lakes. It is friendly or at least tolerant to other birds, and the grackles and night herons sometimes rear their young among the loose sticks of its eyrie. The early settlers, though often fishermen, cherished and protected it, and the immortal Wilson wrote a poem commemorative of this mutual trust and familiarity. It has remained for our modern thoughtless civilization to wantonly destroy this bird until it is almost a rarity. Virtual extermination has been its fate in England, but that country would now gladly restore it were this possible. Shall we not profit by this mistake of the mother country before the opportunity is past?

In certain of our eastern states, it is the custom for so-called sportsmen to station themselves at some favorable point on the line of flight of migrating hawks and to shoot them down by hundreds, sometimes attracting them by a lure, usually a stuffed owl. It should be a source of gratification to nature lovers to note that at the recent meeting of the American Ornithologists' Union at Ottawa, Canada, a resolution was adopted as follows: "Resolved, that the American Ornithologists' Union deplores the present tendency to wantonly destroy birds of prey as more likely to result in economic loss than in gain; and also deplores the use of the word 'vermin' for these birds as tending to produce an unwarranted prejudice." Such expressions, which reflect the views of thousands of Nature lovers, and the recent organization of a society which has for its purpose the reasonable protection of these much persecuted birds, mark steps in the right direction.

PHOTOGRAPH CORDELIA J. STANWOOD

YOUNG OF BROAD-WINGED HAWK

This species feeds mainly on insects, and its record is particularly clean as regards game birds and poultry.

Hawks and other birds of prey, as well as the song birds and the so-called game birds, are all a part of Nature's wealth of life, a wealth that belongs not alone to the student of song birds, nor to the sportsman, but to all the people for all time. The ancestors of our living birds of prey have joined the extinct faunas of the world, and their passing is a part of its history. So in time will our recent species leave their bones in the rocks, and should be succeeded by other forms. We owe it to those of our race who follow us that we refrain from destroying any of these links in the chain. Yet in our treatment of many beautiful and interesting forms of wild life, feathered and furred, we are pursuing a course unworthy of a race which prides itself on its scientific knowledge. On this continent there is still a wonderful supply of wild life that is ever increasingly dear to that growing class who wish to observe it in its daily life, rather than to destroy it for sport or gain. Still, in these interests, the killing of many of our most interesting species goes on, almost without restraint, until extermination threatens. Then, all at once, some magic power of restoration is invoked, and in this blind process other equally valuable forms are swept out of existence.

Man, himself, for all we now know, may vanish from earth, and give place to other organisims, perhaps some which he now despises. The past is irrevocable; the future is beyond our power to hasten or to abate. But if man's search for knowledge is to justify itself, he will not destroy these beautiful forms of life wantonly, but will protect them for the good of all, considering his neighbor.

TREASURES LOST A HUNDRED YEARS

By Ethel Mason

PIKESVILLE TOWNSHIP
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A RARE dove, a lovely flower, a unique cactus, and a rodent that naturalists knew about and wanted to find again, are the four latest wonders of the world of science to turn up after their mysterious disappearance for a hundred odd years.

The Marquesas dove is a rather small species that was originally discovered by Captain Adam von Krusenstern who made a three years' voyage through the Pacific about 1803, in the hope of finding the North East passage through Bering Straits, that had lured so many hardy mariners around the world.

A naturalist had accompanied the expedition, and while the Russian naval officer compiled his maps of the voyage, a plate was prepared of the new dove that had been named "The Kokuh" and this appeared in the atlas published by Krusenstern some years later.

Curiously enough, though the island of Nukahiva was the one most frequently visited by traders and explorers of that region, the dove was not seen there again and apparently was extirpated. Another Russian explorer, Comdr. Urey Lisiansky, had also paid a short visit to Nukahiva Island and was obligated by naval etiquette to call upon Captain Krusenstern.

When an island was later named for Lisiansky in one of the northern Hawaiian groups, he rather ironically designated a large rock, "Krusenstern" . . .

Meanwhile the Marquesas dove slipped back into the South Sea mists as far as science was concerned, though a French naturalist, Vieillot, named it the *Columba rubescens* in his Dictionary of Science that came out in 1818. The interesting old atlas written by Krusenstern became extremely rare, even in Russia, and so it was not until a century later that a noted ornithologist of England, Dr. Ernst Hartert, commented in looking at the plate of the "Kokuh" that if the colors were as painted, the pigeon was a species unknown to science.

But the mystery was solved when an expedition was sent down to the Pacific Islands by the American Museum of Natural History a few years ago. Apparently the bird had died out on the island visited by the Russians, but it was found to be quite common on a smaller island less frequently called at by passing vessels, and through a private collector of rare birds out in California, a number of Marquesas doves were finally placed on exhibition in the Zoological Park at Washington, D. C.

The history of the missing flower is almost as romantic an episode, as it links up the present-day activities of botanists with the more exciting era in Colonial times

COURTESY WILD FLOWER PRESERVATION SOCIETY

THE LONG LOST "PINK TURTLE" FLOWER

A greatly enlarged picture of this elusive plant, whose magenta-pink blossoms were sought for many years by botanists.

when the woods and vales of the historic Yorktown region were visited by the young English law clerk, John Clayton. He lived in Matthews County, Maryland, but rode over by horseback each day to his office in Gloucester County and frequently made discoveries of new and interesting plants that he sent back by "fast packet" to the noted Swedish scientist, Linnæus, in the Old World.

A certain famous professor of Holland, named Gronovius, had written a most interesting volume on the flowers and plants found in the territory covered by Clayton, and called it "Flora Virginica", though many of the plants in question were found far outside the state now known as "Virginia," one in particular being called the "Pink Turtle Head" that had been first discovered by the young botanist. It had a long Latin name which referred in part to its pink color, similar to that of a Damascene rose, but this was cut by Linnæus to *Chelone obliqua*, doubtless because of the oddly hanging leaves.

But the plant then disappeared from view, in spite of the constant hunt for it ever since, and it was not until recently that it was again located by J. E. Benedict, Jr., and later by Dr. Edgar T. Wherry, who ran it to earth in a marsh not a stone's throw from the pile of old stones that marked the site of Clayton's home on the Patuxent River.

Dr. Wherry, accompanied by an American authority on this group of plants, Dr. F. W. Pennell, took a trip out on the five mile road that had been followed by Clayton so many years ago, and finally reached the property once occupied by the English naturalist whose love for flowers adorns the history of that county. And down the hill a little way, close to the dense swamp that had hidden it safely all of a hundred and more years, the botanists uncovered a little colony of magenta-pink blossoms which proved to represent the lost species.

THE RARE AND ELUSIVE CACTUS

It was finally located near Port-au-Prince, Haiti, and renamed for Dr. Abbott.

The lost rodent, however, was probably the most important of all the missing treasures, from a coldly scientific view. There was mention of it in a notable work by Cuvier, one of the famous naturalists of the last century; and something had been said in a book by H. D. de Blainville, which discussed the bony structure of mammals. But as the teeth and skull are the important parts of the specimen, the rest of the animal is often neglected in such accounts and as the generic status of the rodent was in doubt, since the only specimens from the region consisted only of a few bones and teeth deposited in the Paris Museum, the problem of the rodent was of keen interest to each scientist in the field. No one knew exactly where to find it, and a good deal of money had been spent by private collectors until by a stroke of good fortune it was located in the Samana region in Santo Domingo by Dr. W. L. Abbott, who had been on its trail for years. Even with the acquisition of the prize, the matter is not entirely cleared since our knowledge of the life history of Plagiodontia still leaves much to be desired.

The lost cactus was also found in the West Indies, not far from the town of Port-au-Prince, on the Cul-de-Sac, Haiti, and was brought to sight again through the efforts of Dr. Abbott, who was heading an expedition to that district. One of his assistants, Mr. E. C. Leonard, made the discovery, and estimated the rare find as being some thirty feet in height. Green cuttings were made and brought back to the States, where they were planted in the Botanical Gardens at Washington, D. C., but as often happens to such cactuses they failed to react to the new surroundings and harsh climate.

THE RODENT THAT WAS "MISSING"

The mammal was finally rediscovered in Santo Domingo by Dr. W. L. Abbott, who sought it for years.

The cactus, which had first

een described by Charles Plumier in 1698, was renamed n honor of the famous naturalist who had headed so nany expeditions into the far corners of the earth, and t is now listed as the *Neoabbottia*. Though the Hai-ians apparently seemed to enjoy the fruit in spite of its spines, Mr. Leonard reports that it has so many seeds it was impossible to get much flavor, though the fruit itself is as large as a hen's egg.

However, the joy of connecting up these missing links of the plant and bird and animal world is a thrill in itself.

Trachodon, the Duck-Billed Dinosaur

By C. W. Gilmore
Curator of Vertebrate Paleontology, U. S. National Museum

THE Duck-Billed Dinosaur *(Trachodon annectens)* if we may judge by the abundance of its fossilized emains flourished in considerable numbers during the Jpper Cretaceous geological period some 7,000,000 or 3,000,000 years ago. Taken all in all probably more has been learned about the Duck-Bill than of any other dino-aur, for not only is the bony structure known from everal almost complete articulated skeletons, but the dis-overy in Wyoming of a so-called "mummified" speci-nen showing impressions of much of the skin covering gives us a knowledge of its external appearance, a rare occurrence among extinct animals. This dinosaur mum-my shows the animal to have been covered with a thin epidermis of scaled skin made up of tubercles of differ-ent sizes and arranged in definite patterns, the larger tubercles predominating on those surfaces most exposed to the sun.

Fully adult individuals of the Duck-Bill reach a length of thirty feet measured from the end of the nose to the tip of the tail, and when one walked around on its strong hind legs the top of the head would be elevated from twelve to fifteen feet above the ground. The skull is nearly a yard in length, with the nose expanded to form a broad, duck-like beak. It is to this peculiarity that the popular name refers. In life this beak was probably cov-ered with a horny skin or sheath, as in birds and turtles of today, thus admirably fitting it for pulling up rushes and cropping off other coarse water-growing plants on which this animal was supposed to subsist.

One of the most remarkable features of this plant-eating dinosaur is the set of more than 2000 teeth with which the jaws are provided. The teeth in each jaw are arranged in fifty or more closely set vertical rows with from eight to fourteen teeth in each row, one above another. Not only were these animals superior to human beings in the total number of teeth, but they also enjoyed the advantage of always having a complete set, for as a tooth was worn out or lost through accident, it was immediately replaced by the next one below which gradually moved upward to take its place. This replacement, as in all reptiles, continued throughout the life of the individual, for germ teeth immediately developed at the bottom of the row whenever one was lost at the top.

The greatly reduced size of the fore limbs with long slender webbed toes indicates that locomotion was almost entirely on the strongly developed hind legs, the weight of the body being counterbalanced by the long, heavy tail. It seems quite reasonable to suppose that the small fore limbs were only brought into use for supporting the body when the animal was feeding on ground vegetation.

It is thought from the high position of the nostrils on the skull, the wide duck-shaped beak and the webbed fingers of the fore feet that the Duck-Bill was a water-living animal and that it probably frequented the bayous, lagoons and other marshy places where it fed on the luxuriant growth found in such a swampy environment.

TRACHODON AS HE WAS

From his expression he must have been a witty fellow with a sardonic dispositon.

American Nature Association Activities

THE American Nature Association and the American Tree Association have been delighted to cooperate with *Holland's Magazine* in a beautification campaign conducted successfully in the schools of the southwest. Mr. Charles Lathrop Pack and Mr. P. S. Ridsdale served on the board of judges in the contest and will continue to serve in deciding the winners in two classes for which the contest is open until April 30, 1927. Members in the southwest may be interested in getting in touch with the Campaign Editor, *Holland's Magazine*, Dallas, Texas, for further details.

* * *

In this connection, and in relation to the American Nature Association's roadside beautification work, members will be interested to know that Colonel Edward S. Cornell, president of the National Highway Protective Society, reports that state highway commissioners in several states are most favorably inclined toward laws for uniform control of billboards.

* * *

It is always gratifying to have one's aims seconded, and the members of the Association will find much satisfaction in the report of Raymond H. Torrey, field secretary of the National Conference on State Parks, placing particular emphasis on the importance of using national and state parks for Nature Study. To this end this Association has

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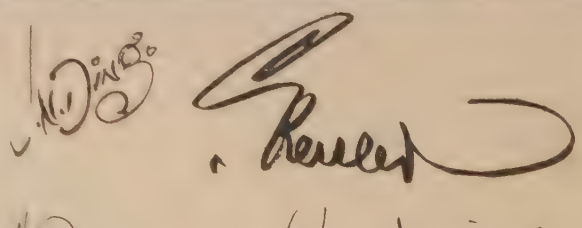
"Don't you have a contempt, Emma, for people that don't love the country?"



WERE we to print the pictures of the three nationally-famous cartoonists who are judges in the Nature Magazine Outdoor Good Manners Cartoon Contest, few would recognize them. Hundreds of thousands, however, know these signatures of Darling and Kessler and Smith.

As to the contest, let us repeat the aims and conditions briefly:

Object: To bring out the cartoons best expressing the need of roadside beautification and directed against the various desecrations of Nature's beauties.

Rules: Contest closes April 1. No restriction on number of cartoons by an individual. No cartoons returned except those with postage enclosed.

Prizes: $100, $50 and $25.

Send Cartoons to:

CARTOONS,
Nature Magazine,
1214 Sixteenth Street, N. W., Washington, D. C.

has cooperated to a distinct degree in the provision of material in three of our National Parks.

* * *

Members of the Association living in and near Buffalo, New York, should not fail to take advantage of the fine series of Friday evening lectures arranged for the year by the Buffalo Academy of Sciences. The lectures will be held in the Hutchinson High School. Organizations will also find the Lecture Lyceum Bureau of the Academy of assistance. Mrs. Edith F. Busch is in charge.

* * *

The Chairman of our Board of Directors, Mr. Charles Lathrop Pack, contributes a helpful and constructive article to the October issue of *City Planning*, the quarterly of the American City Planning Institute and the National Conference on City Planning. His text is the community forest as a part of the city plan.

* * *

Members will be pleased to know that two pages of color pictures will appear in each issue of Nature Magazine during 1927. This will give opportunity for a wider range of subject material and permit adding to the number of educational leaflets in color with much greater rapidity. The leaflets on insects, birds and small mammals are now available in separate form and prices for individual sheets and quantities will be quoted on request.

NUTTALL, BOTANIST and ORNITHOLOGIST

By D. C. Peattie

ON his printer's type case was propped before a young apprentice in a shop in Liverpool a book on Natural History which he read while he ought to have been setting the type for Priestly's great treatise on chemistry. The other young printers eyed their fellow worker, Thomas Nuttall, askance, and wondered just how long it would be before the master printer would come in and, discovering how Nuttall passed his time, would discharge him.

Perhaps he was dismissed, for aught we know; to this day all too little is known of one of the greatest botanists and ornithologists of America. Certainly he drifted about from place to place, very poor, very much out of favor with his rich relatives, until chance brought him on a tempestuous voyage to America. He entered our country between the Capes of Delaware, by the same route that Rafinesque and so many other great naturalists have used. Like them he resided in the winter in Philadelphia, then the largest city in the country and its intellectual capital, and in the summers he migrated with other citizens to Germantown to escape the tropic storms of yellow fever and malaria that about that time used to sweep up the Atlantic coast, carrying destruction in their wake. The very first year that Nuttall came to America, all on fire to explore the field and forest, he resolved to collect and name the plants of the interesting peninsula that lies between Chesapeake Bay and the estuary of the Delaware. Rafinesque, too, had explored this region, and many botanists have since visited it, yet nobody has ever gained a knowledge of this flora so thorough that he could write a complete account of it. The task lies open to someone still—a work to be done.

THOMAS NUTTALL, 1786-1859

After a daguerrotype by E. A. Rau, Bethlehem, Pa., in "Botanists of Philadelphia," J. W. Harshberger.

The training was splendid for Nuttall, even if the task was too great. He continued his journey through Virginia and North Carolina, along the coasts, in the hottest and most unhealthy time of year and was so bitten on the face by insects that his features became inhuman, and in one place he was refused admittance to a tavern on account of his ruffianly appearance.

The next year Nuttall, in company with a Scotch naturalist, Bradbury, ascended the Missouri River. They were the first naturalists to penetrate west of the Mississippi. On this trip the two scientists were captured and robbed by Indians, and Bradbury only saved his life by taking his watch to pieces and distributing its parts about among the childishly delighted savages. As for Nuttall, he got lost, became unconscious with hunger, and was found by a friendly Indian who paddled him down river to a white settlement. During the years that followed Nuttall traveled constantly, along the Great Lakes and the Ohio River, to Florida and through all the southern states. Not a bird escaped his eyes, and wherever he went rare flowers were found by his swift observation.

At other times he was back in Philadelphia, studying his collections. Even his intimate friends scarcely knew where he boarded, this economical, silent, bald young man who had already acquired all the reticent and precise manners of an old bachelor. Frequently he forgot to leave the old museum in Philadelphia even to eat his meals. Yet with those who knew him well he was expansive and jolly, relating stories of his life among the Indians, or as a journeyman printer.

Again he crossed the Mississippi and explored Arkansas Territory, writing a book on his travels and a guide

to the botany of that new land. Here, through illness and Indian treachery he several times nearly lost his life, but undaunted he stayed on until his knowledge of climate, geology, Indian customs, botany and ornithology was complete.

Nuttall's reputation was by now a fine one and he had written many articles and several splendid books on botany, the value of which we are apt to forget because his discoveries have now been incorporated into larger and more recent works. But the solid excellence of his botanical studies won him the position of curator of the botanical garden of Harvard University. The salary was poor and Nuttall was not very contented there, nor did he ever make many friends, owing to his reticent habits. The gardener's house in the garden, where he lived, he altered to suit his needs; he had a ladder and trap door built from his study to his bedroom above. Also he cut a door from his study out into the garden, and he alone kept the key. In this way he could pass his days in utter seclusion.

In those years in Cambridge he left his mark upon the science of ornithology, and the local bird club of Cambridge is known as the Nuttall Ornithological Club. In the narrow confines of the little Botanical Garden he made observations on bird life which another man might have traveled far and wide to equal. As one walks the paths of the old garden one may fancy at times that one can still see the shy figure of Nuttall, following the course of some bird among the trees, except that in his day the garden was very different—dense with the undershrubbery that Nuttall loved because it invited the shy birds and hid the shy naturalist himself.

Nuttall's residence in Cambridge is notable for the production of a truly great book, his "Manual of the Ornithology of the United States and Canada." This little work, for it is a very compact and modest one in appearance compared with the huge and costly volumes of Audubon and Wilson, is a model of accuracy, conciseness and fine literary style. Not that Nuttall made no errors in it; there were some due to the incomplete knowledge in those days of the full ranges of some birds, and the nesting habits of those that dwelt far away.

Audubon's books, which began to appear just as Nuttall's was issued, are distinguished for their beautiful drawings and the poetic glamor of the birds' life-histories and Audubon's personal experiences. Wilson's books, which were published twenty-five years earlier, are notable for the spirit of true science which pervades them, their originality and intimate knowledge of birds. But Nuttall, too, knew birds at first hand, and he had explored many of the wildest parts of our country. Availing himself of all the information then accessible on American birds and adding his own observations, he was able to produce, nearly one hundred years ago, a book that in many ways is still unsurpassed. A recent edition, bringing Nuttall's work up to date, has been issued and is as useful to modern students as was the first edition to ornithologists of that day.

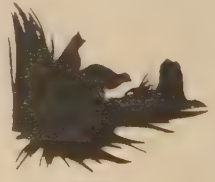
What chiefly distinguishes the book, however, is a virtue rare in scientific books, a fine literary style. There is nothing over-personal or elaborate in Nuttall's Manual such as there is in Audubon's "Biographies" or Rafinesque's writings. The beauty of Nuttall's phrase and diction is not something perceived at once, as it would be in a poet's style; he is economical with his gift, and inserted it almost invisibly into his science, so that no one quotation from his Manual would give any idea of the restrained art that pervades the whole book.

Nuttall was in one way really original among American ornithologists; he made a specialty of studying birds in captivity, and thus he learned things about them which one might strive vainly to discover in the wild. He must, from his account, have kept a great number of caged birds, all whistling and gabbling, in the old botanical garden.

The end of the Cambridge sojourn came when Harvard refused to grant him an extended leave to join an expedition, so he resigned, probably with a sense of relief, and signed with Captain Wyeth in a cross-continent exploration trip. And so it chanced that it was Nuttall who first picked many of the beautiful spring flowers on the slopes of the Rockies, the little alpine flora that springs up at the edge of perpetual snows, the virgin, flowery carpet on which no botanist had gazed before. He saw the wonders of California and visited the abundant beauties of the Hawaiian Islands. Thus it is that a large share of the finest wild flowers of Colorado and California and intermediate states, were first named by Nuttall.

On the return journey, around Cape Horn, Nuttall begged the captain to put him ashore, if only for a few hours, on that wild and mysterious spot; the chance to botanize Cape Horn comes to few men today and in his time it was more alluring still. However, the captain looked anxiously at the dark skies, and sailed on without gratifying our naturalist. But when Nuttall reached Boston and went to pay for his passage, the shipowners would not take money from a scientist of such worth, declaring that he had conferred a benefit on them and humanity by his travels.

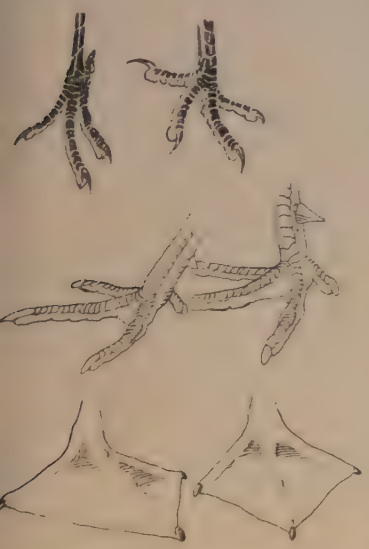
Late in life Nuttall received an inheritance, an estate in England. It was given him on condition that he live there nine months out of the year. This was distasteful to Nuttall, but because the money would benefit his favorite sister, he accepted the bequest, only once to return to us. He lived out his last days at "Nutgrove," a poor country gentleman, an exile in his native land, as he said, who never ceased to regret that he had left America, with all of its natural beauties and the unexplored wonders of its wilderness that lured the naturalist.



Some Interesting Things to See in January

E. Laurence Palmer

IT IS entirely appropriate that with the beginning of the new year this section change slightly from the plan which has been followed during the last twelve months. January is a month when we turn over new leaves and strange to say some of the "new" leaves which we turn over are old leaves which we have turned over before. Turning over anything in Nature almost invariably leads to interesting observations whether the things be leaves or stones or logs or even habits of thought and physical behavior. A few of the interesting things mentioned for this month were discussed in articles in Nature Magazine for last January and if you do not have time to go to Nature for the answer, you can turn to Nature Magazine. A few of the things mentioned will be discussed in numbers of the magazine which are to appear shortly. A few will have the answers already supplied in this article and still others will leave the problem of finding the answer up to you and your own observations. I should appreciate cards from a few of my readers indicating whether or not this department meets with your favor, or offering any other suggestions which you may care to make.



Who Owns These Feet?

It is the custom of many people to go and hide themselves when things are not "going their way." You might like to watch during January and see if any of the smaller mammals like chipmunks, gophers and the like which may be out in some parts of the country have this habit so well developed that they not only hide but pull their holes in after them if such a thing is possible. The burrows of all sorts of creatures may be worth watching in January since they will tell you many things about the inhabitants which you may not be able to see the animals actually doing. It might be interesting for you to count the number of burrows in a given bit of woodland or open field at two or three different times in the month and find out whether this number remains the same, increases or actually decreases. Remember that some of the things which Rupert Brook mentioned in his poem "The Great Lover" as being things he had loved were "holes in the ground." Can you join him in his appreciation? If you haven't read the poem let me suggest that one of your New Year's resolutions should be, "I will read 'The Great Lover' at least once a month this year."

Pulling In the Hole After Him

We think of pines and hemlocks and holly as being winter evergreens but rarely do we hear people speaking of mullein and dock and plaintain as being evergreen. If they aren't evergreen see if there is any time during this month or any other month when they are not. A Nature student sees beneath the surface literally and does not judge a bird or mammal or even a plant by superficial evidence. To this end let me suggest that you look under a snow bank for the rosettes of many of the weeds that will bloom next summer. Some of these weeds are perennial, living many years; and others live only over the one winter. Nature Magazines of the past may help refresh your memories in regard to these problems if you have not already remembered about them. Are the root systems of these weeds all generally of a similar nature or do some develop elaborately branched root systems and others a single well developed tap-root?

See Page 27

The tracks of various birds may be found in the snow in January and they may mean more to you than you expect if you just think of these things. Last January's Nature Magazine showed you a picture of a crow, of a gull and of a pheasant. One of these birds swims well and shows it in the tracks it makes. Another scratches for a living and so has developed a different arrangement for the hind toe than the third bird, which is the best percher of the three. It might be most interesting for you to find about these differences through the birds in the field but if that is not possible a little study of the pictures may be satisfactory. In this connection you may find it particularly profitable to study the manner in which a crow holds its front toes as shown in the photographs in the December, 1923, Nature Magazine.

A few hours before I began writing this I was in one of the biggest museums in the country. I was looking quietly at a museum case when a distant hum finally developed into a confused roar and an unfortunate

teacher and forty-five youngsters bore down on my part of the museum. I was impressed by one remark which was repeated over and over again by the teacher. In fact it was so conspicuous that I timed her and in two minutes she said it four times. It was "Keep your hands off the glass." Finally the confusion became so great that she was compelled to marshal them into prison gang formation and march them off, but as she disappeared in the distance the last words that came back to me were, "Keep your hands off the glass." I am not criticizing the teacher but sympathizing with her attempt to curb that natural instinct which children have to take things, to hold them and to use their senses in understanding them better. It interested me so much that I gave a child I saw a few hours later a new thing just to see how he would acquaint himself with it. He felt it. He shook it. He pinched it. He tried to bite it and he generally abused it but he found out something about it which was more satisfactory than anything I could have told him. Let me suggest then probably the most interesting object of study for January may be a little child. What you learn from your studies may, if you think about them, be useful to you in helping that child learn to make a place for himself in the world. I hope that the readers of this section will learn how to read not only interesting things about fish and birds and trees but human beings as well. What means does your child or your child friend use to find out something concerning an unknown object? Is this the same with all children?

The Woodpeckers Dine

It may interest you to know that the creature I was looking at in the museum during the beginning of the above episode was a Hercules Beetle. It was one of those creatures that seems to have an enormous claw at its head end. There seem to have been many explanations for the use of this claw. If you read Nature Magazine carefully this month you ought to get some light on the use made by these beetles of their claws and also some light on how people go about it to find out about these things. There was nothing on the museum label to tell me about this and I might attempt to explain it from the dead beetle but the article "The Truth About Hercules" helped me understand the beetle much better.

Frequently we find individuals ready to state that an individual woodpecker which visits their feeding station is Mrs. Woodpecker while another is Mr. Woodpecker. Sometimes they are right in their observations but this is not always so. For example red-headed woodpeckers frequently visit a feeding station. Sometimes young red-heads join the group and are designated as being the male or female while the adult is dubbed the opposite sex. It happens that adult male and female red-headed woodpeckers are colored alike but that the young may have the grayish head instead of the red head. The color of the head variation is not, then, a key to the sex of these birds. Male downy woodpeckers and male hairy woodpeckers differ from the females in that the males have red at the back of the head while the females do not. Nuthatches are very similarly colored in the two sexes but the male has the black on the head a clean black while in the female it seems to be bluish-gray veiled. In chickadees, the males and females are colored alike. It might be interesting for you to watch a pair of chickadees to see if both individuals give the "Phœbee" call which many persons mistake for that of the phœbe. This may set you on an interesting line of investigation so I will let you follow it by yourselves. Too big a crowd interferes with the best observations on birds. Song is one of the courting accomplishments of birds and the males generally do the courting.

By the way don't forget to watch this January weather for the snow fleas that were mentioned in the magazine last winter. They are annually interesting even if they are not perennially so. Do you remember the peculiar means of locomotion which they had and also the weather conditions which favored their development and abundance?

The January thaw may be the signal for not a few insects like the mourning cloak butterflies to become more conspicuous. The bees in a bee-hive may serve as somewhat of a barometer and there may be other signs in January that creatures are still "alive and kicking" in spite of the seeming hardships of winter.

There are in existence of course many more kinds of insects than of birds but it might be interesting for two groups of you to take a January hike and one of you to look for insects and the other for birds. Which do you suppose will find the greater number? There is but one way to answer this question and that is to try it and see. Don't forget to make your New Year's day bird census. It is a mighty fine start for the year.

This Month's Story

The story for this department this month is written by Carolyn Sheldon, the fourteen-year old daughter of Mr. Charles Sheldon, a Nature lover and conservationist. She has caught the beauty of a secluded lake and told it well in words.

For the Children

WILDERNESS PETS IN NOVA SCOTIA

By Carolyn Sheldon

IN the heart of the beautiful wilderness of Nova Scotia nestles a tiny lake, hidden among the trees. It has no inlet, so it is as clear as a spring, and one can see the bottom almost everywhere. On a fine summer day, a gentle breeze makes a thousand little wavelets dance on the water, while the golden sun softly kisses them and makes them glitter like many little sparkling diamonds. Nothing can be more exquisite.

I think this place must be one of the fairies' favorite haunts. On the little penninsula, where our tents are pitched, I am sure that those who come around us every day are fairies, although they don't appear in the form of the dainty little figures with golden hair and gauzy wings that we read about in story-books. They show themselves in different forms of wild life.

Many bright-colored warblers, singing sweetly, flit among the branches over our heads, giving life and bits of color to the sombre green of the pines; thrushes are not only tame enough to hop near us, seeking food in the bushes, but often they delight us, by making the silent woods ring with their harmonious, flutelike voices. In the evening twilight, and even after dark, when the woods are hushed and still, their dreamy, haunting songs sound all about us from the very tops of the fir trees.

A pair of loons breed on the lake every year, and it is a lovely sight to watch them come floating within ten feet of our little dock, searching for food for two hungry youngsters, swimming sedately behind. We have often watched the mother feeding her young. She will dive suddenly and in a short time come up, a little way from the babies, with a small chub or perch in her bill. They scurry quickly up to her and one or the other of them grabs the fish and swallows it. Often these strange birds come so near that one may easily see the red of their eyes and the black and white markings of the head and neck. All day long, and all through the night, their strange, wild calls and goblin laughter sound loudly over the water and echo about the shores.

On some of the numerous rocks rising out of the lake the great black backed gulls lay their eggs on shallow nests of grass and roots. Once we brought two fledgelings who had just emerged from the eggs to our camp. Most of the time they lay on a soft pile of leaves in the woods or stood on a big rock sunning themselves, their feet in the water. They were very cunning to watch, and it was great fun to bring them up tame, and observe their habits.

ONE OF THE PETS OF THE WILDERNESS

This black-backed gull is typical of the wild folk who have lost their fear of the humans who live on the lake's edge.

At any time during the day a mother merganser and her young, numbering fifteen or sixteen, may come splashing by, making the silver spray fly about their heads, as they scurry along or suddenly dive to catch minnows. At night a pair of barred owls, who have always lived about the lake, continually start the echoes answering their weird calls—sounds which must frighten many little people of the forest, on whom

these birds are accustomed to prey. A large snowshoe rabbit often comes to eat pieces of bread strewn around for our other pets. Two or three chipmunks are always scampering here and there packing anything eatable in their pouches, to store underground, so that when winter comes they will have plenty of food. All around are holes of the little red-backed mice. It is very amusing to watch those funny little fellows popping out of their holes to seize a piece of bread and then dodging back in again.

From a canoe, we have often watched muskrats silently swimming near, carrying in their teeth a branch, the leaves trailing across their backs. This, they weave into the walls of their houses. Sometimes when we push the canoe too near they dive gracefully under water, the submerged branch apparently not hindering their easy motions while swimming beneath the surface. In the lake also are three beaver-houses, in which live two or three beavers, all that have escaped the trappers who try to capture them every winter. All around the shore we see small poplar logs which the beavers have cut to a length of eight or ten feet, some with the bark completely gnawed off. Various signs everywhere in and about the lake show what a busy life the beavers lead.

The small chubs, shiners, and yellow perch are extremely fond of rice and oatmeal after it has been cooked soft, and it is fun to watch a large school of these fishes making a hearty meal off the left-overs of our supper or breakfast.

Last, but far from least, there is a dear old bullfrog who lies on a flat rock in front of the tent and solemnly winks an eye at us.

We enjoy our wilderness pets and they seem to have recognized our interest in them and lost all natural fear of us. I am sure that all these little folk are fairies and I hope they will make this fairy lake their home forever.

Western Ladyslipper

By Grant E. Mitsch

ON the foothills of the Cascades, where stately fir trees tower loftily in competition with their neighbors for the much-needed sunlight, grows a delicately hued flower. With every faint zephyr the shadows quiver in unison with the boughs of the majestic firs above and scattered bits of sunlight keep time with the shadows in their elusive game of "hide and seek" played about this beautiful flower.

Such a place of seclusion is a fitting abode for a dainty flower of retiring habits. Near the dwellings of man it would be persecuted beyond endurance, and to gain its much needed safety, it has been forced to rely to some extent on seclusion. This woodland gem is none other than the western ladyslipper. *(Cypripedium montanum.)*

WESTERN LADYSLIPPER
Western cousin of the eastern orchids which seem to get the bulk of the publicity.

One evening with two friends, I took a camera and some film and went in quest of this flower. This was my first trip to the haunts of the ladyslipper and, of course I was much delighted to have my efforts come to an early fruition, especially when I had a camera with me. I was not long in putting the camera to its accustomed task of "shooting" Nature subjects. If I had been much later, however, the main purpose of my trip would have been thwarted as the sun was quickly receding behind the firs.

The eastern cousins of this orchid have frequently made their appearance in Nature Magazine but the less known western variety has failed heretofore to gain such attention. This flower is not so gaudily colored as some of its relatives. Possibly this is one reason that it has been neglected. The plants send up stems which, in the late spring, are crowned with from one to three white-lipped flowers. The veins in the lip are purple and the lateral petals and sepals are rich brown.

This orchid is not abundant, yet, in favored localities it is not rare, and it is to be hoped that it may not follow the path of its eastern relatives because of a few people who can appreciate flowers only by picking them. Such indiscriminate picking must be stopped before it leads to complete extermination of some of our most beautiful wild flowers. People are beginning to look forward more, and, with the aid of the numerous societies interested in conservation, we should soon be educated to the point where we see the folly in destroying our native plants and animals.

NATURE EDUCATION

Prof. E Laurence Palmer, Cornell University, Director

ASSOCIATES

Prof. George R. Green, President, American Nature Study Society.
Prof. J. A. Hollinger, President, National Council of Supervisors of Nature Study and Gardening.
Mrs. Elizabeth K. Peeples, of the Washington, D. C., Schools.
Prof. L. D. Wooster, Kansas State Teachers College, Hays, Kansas.
Miss Clelia Paroni, Supervisor of Nature Study, Berkeley, Calif.
Dr. Bertha Chapman Cady, Girl Scouts of America.

Extension Classes for Teachers

The Brooklyn Botanic Garden started its classes for teachers early in October. These extension classes meet from four to five in the afternoons. Credit for this work is counted toward first degrees and advancement in the public school system. The classes in greenhouse work, principles of agriculture, and horticulture are full. These classes do practically all their work in the greenhouse. This is actual work and not theory. The Nature Study classes have the grounds for their laboratory. A prospectus of the work is to be had by writing the Brooklyn Botanic Garden. In addition to full year courses special fall and spring courses are given covering limited periods.

* * *

A. N. N. S. Joins A. A. A. S.

On October 17, the Executive Committee of the American Association for the Advancement of Science admitted the American Nature Study Society to official affiliation with the Association. This affiliation entitles the society to representation on the Council of the Association for the first time in the nineteen years of our existence. The regular representative will probably be chosen at the Christmas meeting in Philadelphia, at the twentieth annual meeting of the society.

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Children's Gardens

The annual exhibit of the Children's Garden Club of Normal, Illinois, occurred the last week in September. This club was organized thirteen years ago with a membership of one hundred thirty-five. At the end of six years it had grown to over five hundred. It remains at about that number. Each year some of the older children drop out and younger ones take their places.

The club is a community affair. Any child who attends any of the schools in the town, and who has a garden of his own at home may become a member of the club. He may raise vegetables or flowering plants or both.

The garden work is a definite part of the Nature Study program of the schools. In the fall, studies of garden plants are made, seeds collected, color schemes observed, and insect enemies identified. In the spring comes the study of seed catalogs, experiments with seeds and seedlings, methods of propagation and the making of garden plans.

The work is directed by the head of the Nature Study Department of the State Normal College. Each garden is visited twice. The students who take the course in Home and School gardens visit a number of the gardens as a part of their training. A garden visitor who is paid a salary for three months by the school boards and the Women's Improvement League conjointly, visits the gardens during the summer. She gives advice for planting, replanting and for the care of the plants. She suggests ways to improve the yards as well as the gardens. She also helps to secure a market for some of the products. At the same time she keeps up the interest of the children during the vacation when it is likely to lag.

WHO'S WHO IN NATURE STUDY

Ellen Eddy Shaw

"My first interest in Nature Study was aroused through my father," says Ellen Eddy Shaw. "We children, in a simple little New England home, always had little gardens, and each our own plot in which we might raise what we liked under father's direction. My father was always trying little Nature experiments with us, and I can remember finding pods of the catalpa tree, taking them apart, and starting seedlings. What joy the next season brought me when I viewed my small catalpa trees!"

With such a background it was indeed a "happy accident" which gave Miss Shaw, just after her graduation from college, a chance to teach Nature Study in a small New England town. By the second year her work had outgrown one town, and reached over into the next.

There followed positions in the new Platz State Normal School and Rochester City Training School, involving large gardens connected with the practice schools, home gardens, garden clubs, and assemblies, as well as classroom instruction. At the Ethical Culture School of New York City where Miss Shaw later engaged in the same line of work there was built for her a greenhouse on the roof, the first greenhouse in the city of New York for children's work in connection with schools. When the Brooklyn Botanic Garden was about three years old, she came to her present position to start the work of elementary education.

HINTS and HELPS for HOME and GARDEN

January

You don't have to be a florist and have a row of greenhouses to fool King Winter. You can make lovely flowers grow in your home, even before spring has driven the frost from the ground. Early spring bulbs—hyacinths, crocuses, and daffodils—may be planted in pots of good rich soil. Bury these plants out of doors for eight or ten weeks and forget about them. Then dig them up, water them, and bring them gradually into the light, watering them daily. About a month later they will bloom very nicely. If, however, you expect them to beat the outdoor blooms this year, you must waste no time, but start immediately.

Now is the time to send for seed catalogs and from them to plan next year's garden. Next month you will find on this page some helpful suggestions about the amount of seed to buy and how to plant it.

* * * * *

If you have tender roses in your garden and live north of the latitude of New York City where winters are severe, now is the time to put on a final extra covering. Be sure the soil is heaped up well about the plants so as to bury them as deeply as possible. Sometimes it is also a good idea to cover the plants with straw, holding it in place with boards. The danger lies not in the actual freezing, but in the burning effects of the rays of the winter sun.

* * * * *

Garden lovers are passing about a new trick they have learned for keeping iris healthy. After the frost has killed last summer's leaves, add a little dry litter to the bed and set fire to it. This destroys most effectively next year's crop of the worms which live on the iris roots and make your iris bed look seedy. Only be careful not to build a real roaring fire on the bed, as this may kill some of the bulbs as well as the destructive enemies you are after.

* * * * *

The bright rays of the winter sun reflected from the dazzling snow also frequently burn hedges and clumps of the beautiful old fashioned boxwood. At this time of year it is wise to cover your boxwoods with burlap and boards. This also prevents their being broken down by the heavy snow.

* * * * *

Any one can grow good edible mushrooms in the cellar in the winter time. All that is needed is good strong soil and a warm place. Mushrooms do not require sunlight. Mushroom spawn comes in bricks, procurable from seedsmen. Free books on home mushroom culture are also available.

The plants in the house need something more than mere watering. The air in our houses often becomes too dry in the winter time from artificial heat. All plants require a reasonable amount of moisture in the atmosphere. So do human beings, although they sometimes do not notice it. Especially in the rooms where you keep your plants, try to keep a shallow pan of water on or near the radiator. If you keep the air in your house healthy for your plants, you yourself will not be nearly so likely to catch cold.

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The garden tools in the cellar or shed should be cleaned and gone over with an oily rag. They will last much longer if treated in this way instead of allowing the rust to strike in.

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Are your new trees and shrubs that you set out last spring and fall tied up so that they will not break down with the winter storms? A little care at this time of year will prevent untold damage in event of a severe fall of snow or sleet. When tying young trees, protect the trees from the rope with a bit of cloth or soft material to prevent abrasion of the bark.

* * * * *

And don't forget that the plants do better if you feed them once in a while. Seedsmen advertise in their catalogs various liquid, powdered, and tablet fertilizers which you can buy very cheaply and administer to your house plants according to directions. You will be surprised at the results. Pots and hanging baskets of ferns will thrive with an occasional application of dried blood which you can also buy from your seedsman.

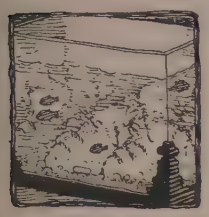
* * * * *

Wood ashes are a wonderful fertilizer for lawns. You can save the ashes from your open fires, if you are fortunate enough to have wood-burning fire places. Hardwood ashes are the best. Perhaps the easiest way is to buy hardwood ashes from a nurseryman or seedman. They can then be spread on the lawn at any time between now and spring. The advantage of doing this now is that the ashes will have soaked in by spring and will not spoil the appearance of your lawn. Wood ashes not only supply a valuable fertilizer to the soil, but they also help to kill insects.

How about the birds? Good outdoor feeding stations protected from the wind, and holders for suet can be purchased or made at home. Catalogs of bird houses, feeding stations and so forth may be ordered from the advertisers in Nature Magazine.

* * * * *

Christmas often brings to the children a bowl of goldfish; and then the family place bets as to how long the fish will live. Goldfish will live for many years, if properly kept in water balanced for their use by growing plants. If plants are properly introduced, it is not only unnecessary, but unwise to continually change the water. Fish do not seem to like a small round bowl. They much prefer a rectangular tank.



Detailed information regarding the above suggestions may be obtained from our advertisers. Write to them, or address your inquiries to "The Inquiry Editor of Nature Magazine."

* * * * *

It would be well at this time for you to look over your camera. If you spent last summer at the seashore, the nickel parts may have begun to rust or to corrode. Wipe them off with a little sewing machine oil, being careful not to get any oil on the lens or film. The camera will give better service.

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This is also a good time to go over your last summer's photographs and mount them in an album before they are lost. As you do this, you will have a chance to study your pictures again and realize some of the mistakes you made in photography. Try to record the conditions under which the pictures are taken; and, by looking at the negatives, determine whether you use too long or too short an exposure. Perhaps you need practice in judging distances. Nature photographers often train themselves to judge distance by practising at home and checking their guesses with a tape measure. It is an important detail to master.

In response to many requests received from our readers this new feature will appear regularly in Nature Magazine. Send in your own suggestions to the Hints and Helps Department of Nature Magazine, and help us to make this page useful to everyone.

Inside the house don't forget that our enemies, the moths, must still be reckoned with. Our winter things are out, but some woolens—such as camping equipment—are put away for next summer. A member of the Association advises buying a can of "Dichlorocide" at the drug store. The full name of this combination is paradichloro-benzine, which is a very effective remedy against fruit borers. It gives out a heavy gas which is more effective than camphor or commercial moth balls as a preventive against moths. When using this preparation, the clothing must be wrapped up or put away in such a manner as to prevent the fumes from escaping.

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Plants belonging to the palm family, which are very commonly used for house decoration in winter, often begin to lose their glossy and healthy appearance. This may be due to the attack of the minute red spider or to other diseases which come from dry atmosphere. Get a little whale-oil soap and sponge off the leaves of the palms with this once in a while. The fronds will begin to look fresh and green again.

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Another good thing for house plants is to occasionally spray the foliage with a fine spray of water. Sprayers for this purpose are very inexpensive and most effective.

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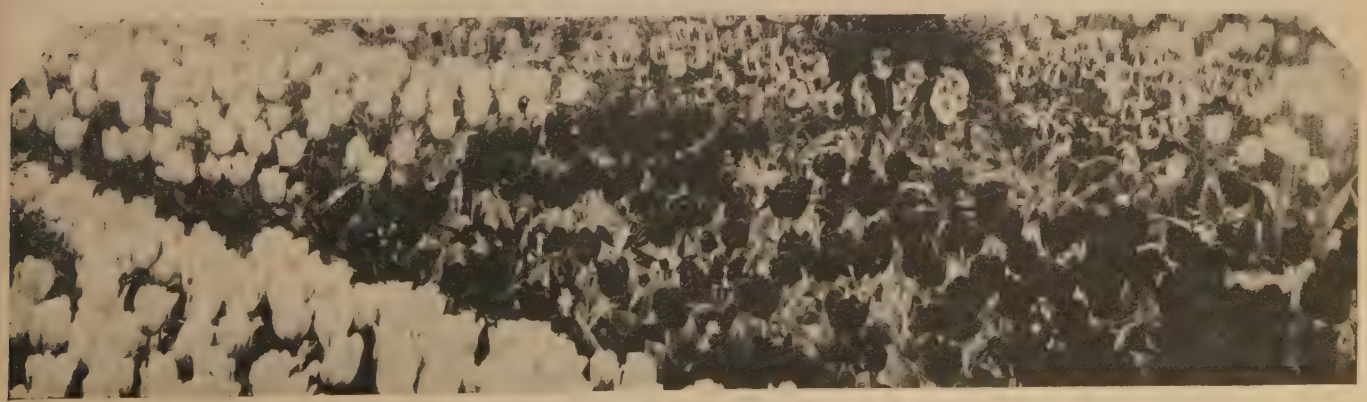
Roots of dahlias and gladiolas, which have been put away in the cellar for next year, should be looked at once in a while. If the place where they are stored is too dry, they will start to shrink and wither away, if too damp they will rot. You can ascertain the condition by looking at the bulbs and moving them to a drier or damper place.



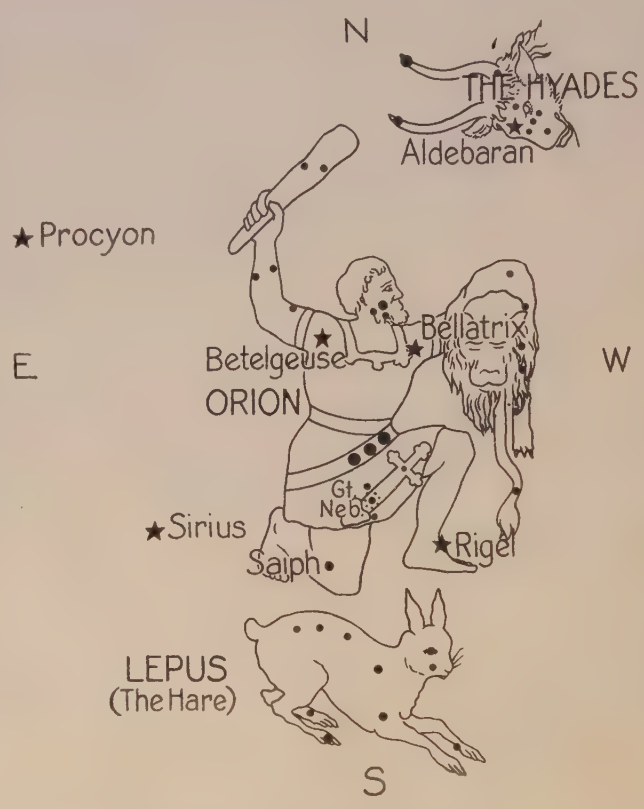
TULIPS ARE EVER A DELIGHT TO THE GARDNER

ORION AND THE JANUARY SKIES

By Isabel M. Lewis

FINEST of all the constellations is the glorious Orion, the warrior-giant of the ancients, which is now conspicuously in view in the southeastern sky. Orion is easily recognized by the line of three bright stars that form the Belt of Orion and by the huge quadrilateral that outlines the body. The ruddy Betelgeuse—an Arabic word which means "arm-pit"—marks the giant's right shoulder. The magnificent, bluish-white star, Rigel, lies in the left foot. Bellatrix, in the left shoulder, and Saiph, in the right knee, are stars of the second magnitude, as are also the three stars in the Belt. The right foot of Orion is concealed by the crouching form of Lepus, The Hare, which lies directly south of Orion and which is outlined by a little quadrilateral of four, fairly bright stars. Orion stands facing Taurus, The Bull, with uplifted club. Over his left shoulder and upraised left arm is the lion's skin, trophy of his prowess as a hunter, which is outlined by a long line of faint stars.

From his Belt hangs the famous Sword of Orion. The central star of the line of three faint stars that form the Sword appears to the naked eye as rather nebulous or hazy. The telescope shows that it lies in the heart of the Great Nebula in Orion, which is the finest gaseous nebula in the heavens, and is a multiple star—that is a star made up of several different stars all close together and revolving around a common center. Small telescopes break this star, Theta, up into four brilliant stars in the form of a little trapezium, and more powerful telescopes show that there are two more fainter stars in the system, so that it is really a sextuple star, or a star that consists of six separate stars.



ORION, THE WARRIOR GIANT
An interesting January planet and a fascinating mythological character is presented this month.

The astronomer can now tell us many wonderful things about the constellation of Orion which were, of course, unknown to the early astronomers who had no powerful telescopes for studying the wonders of the heavens and no sensitive photographic plates to catch wonderful detail that even the human eye cannot see. Photography has shown that the entire constellation of Orion is more or less wrapped in nebulous streamers originating in the heart of the Great Nebula and that there are vast, dark nebulas as well as luminous nebulas in Orion. All of the brighter stars in Orion, with the exception of Betelgeuse, form one enormous group of stars connected with this nebula and its streamers, whose distance from the earth is so great that its light takes over six centuries to reach the earth traveling at the rate of 186,000 miles a second.

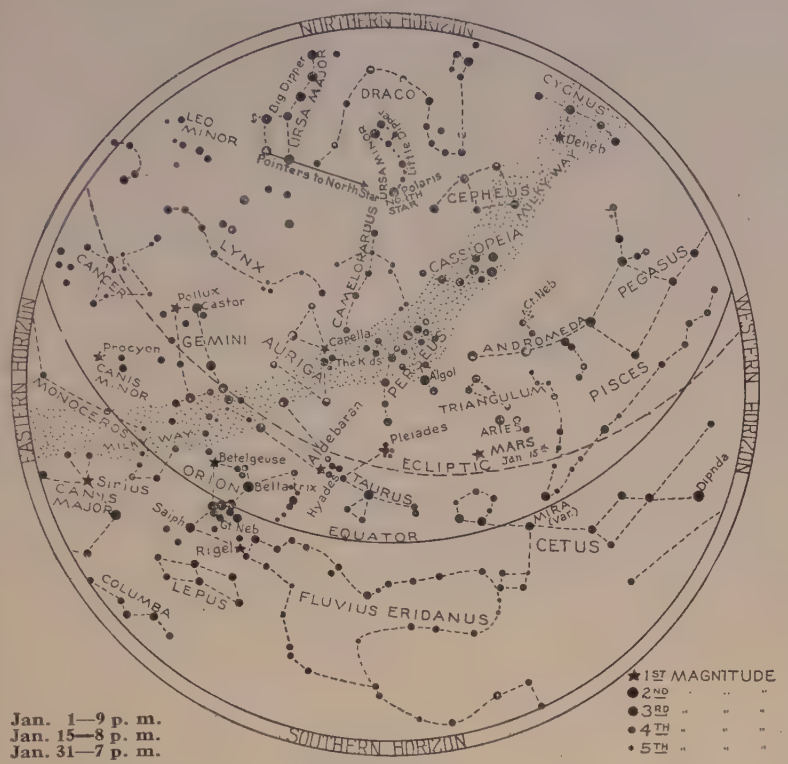
The star Betelgeuse, however, is a very different type of star from the brilliant bluish-white or white Orion stars. It is reddish in color and varies irregularly in brightness. Its distance from the earth is only about 160 light years as compared with a distance of over six hundred light years for Rigel, the three stars in the Belt, the stars in the Sword of Orion and other Orion stars. Betelgeuse is one of the red, giant stars and it has a diameter of over two hundred million miles. If placed at the center of our solar system in place of our own sun it would nearly fill all of the space within the orbit of Mars, and our own Earth would lie beneath its surface. Yet there are now known to be giant stars that are even bulkier than Betelgeuse. Antares, in Scorpio, with a diameter of four hundred million miles and Mira, or Omicron Ceti, with a diameter of about two hundred and fifty million miles, both exceed Betelgeuse in size.

The star in the Belt of Orion that lies farthest to the west is almost directly on the celestial equator so that it passes through the zenith at the Earth's equator, and the constellation is seen equally well in the northern and southern hemispheres. South of the equator, though, the warrior appears to be standing in an inverted position with his feet directed toward the zenith and his head toward the horizon. Orion will be visible throughout the winter and early spring, disappearing in the west soon after sunset in early May as Scorpio rises in the southeast. Possibly for this reason the story originated among the ancients that the sky-warrior was fleeing from The Scorpion. Apollo, so it was said, once sent Scorpio to sting Orion as a punishment for falling in love with the Goddess Diana. Through her intercession he was placed in the heavens opposite The Scorpion so that he might escape in the west as soon as Scorpio came into view in the east.

As Orion stands in threatening attitude facing Taurus his two dogs, Canis Major and Canis Minor, are close at his heels. If the line of stars that forms the Belt of Orion is continued toward the southeast it will pass not far from Sirius, The Dog-Star, brightest of all the stars.

Procyon, The Little Dog-Star, lies to the northeast of Sirius and although less brilliant by far than Sirius it is one of the twenty brightest stars in the heavens. With Sirius and Betelgeuse it forms a large triangle with sides nearly equal in length.

Among the planets, Mars is now in the best position for observation in the evening sky. At nine o'clock in the evening the first of the month it will be found high in the western sky in Aries not far to the west of the Pleiades. It is now receding from the earth and will decrease noticeably in brightness during the month. Although early in the month it is excelled in brightness only by the stars Sirius and Canopus it will become slightly inferior to Capella and Rigel before the month is over. Its distance from the earth on the fifteenth will be about 85,330,000 miles, or about twice as far away as it was at time of opposition early in November. It is far enough at half the distance.



Jan. 1—9 p. m.
Jan. 15—8 p. m.
Jan. 31—7 p. m.

TO USE HOLD OVER HEAD WITH TOP TOWARD NORTH

Venus is now in the evening sky but is too close to the sun to be seen until near the end of the month. Jupiter is now in Aquarius and sets about two hours after the sun the first of the month. It will be a brilliant object low in the southwestern sky after sunset throughout the month. By the first of February it will be only a few degrees east of Venus. Saturn is now in Scorpio and will be seen low in the southeast before sunrise.

One's telescope, when trained on the stars arrayed in the winter heavens will bring the student of the skies many interesting celestial sights. It is, also, a fine all-year study.

A Sturdy Oak

By I. T. SMITHERMAN

PERHAPS more than any other trees, our oaks are noted for their long lives, their strength in the face of turbulent elements, and their individuality. Here is pictured a notable member of the family, a giant live oak which is "down but not out." Fallen though this tree is, it appears to be one of Nature's favorites, for she has granted it continued life. Its trunk upon the ground, its limbs stretching upward and festooned with moss, this oak still prospers at New Iberia, Louisiana. The admiration it now wins might never have been accorded it had it remained growing in the usual way, but its triumphant battle against injury has made it the mecca of kodakers and picnickers. Some of the latter are shown on the tree, giving an idea of the size of its trunk.

YES, BIRD SONGS ARE MUSICAL

Members of the American Nature Association Rally to the Defense of Our Songsters in Answer to New York Critic

IN the November issue of Nature Magazine the statement printed on the left hand side of this page was reproduced and a prize of twenty-five dollars was offered for the best reply to this attack upon the musical prowess of birds. The response was tremendous, and right here, at the outset of this report on the contest, the editors and the judges wish to thank the hundreds of entrants for their prompt rally to the call.

There were two notable things which characterized the answers to the dramatic critic's attack. One was the uniformly excellent character of the replies. The other was the source of these replies. They came from doctors, lawyers, teachers, housewives, clergymen, and, in fact, men and women from every walk in life. The proportion of replies from the youngsters was so small as to be somewhat disappointing, but apparently their parents felt that this was an issue that demanded adult attention.

Some of those who sent their statements felt that two hundred words,—the limit set because the attack was made in this space,—was too scant an allowance. It was, of course, difficult for one to say all that one wanted to in so few words, but it was fortunate for the judges because they would have, no doubt, been reading the replies well into the summer had there been no limit.

In judging the contest, the statements were considered from several viewpoints. It was felt that space was wasted by the contestant when it was devoted to an attack upon Mr. Nathan. (If they still have that capacity, his ears must have burned mightily during the past month.) Thus, even though harsh words about Mr. Nathan may have relieved the feelings of the contestants, it militated against their statement. Clarity and conciseness of expression, strength of argument and sincerity were other considerations.

After the entries had been eliminated down to a small group of outstanding excellence, the five judges considered these separately. Curiously enough they thus arrived at a unanimous decision in favor of the statement from Mr. Raymond S. Deck, of New York City. Mr. Deck, we find is the Assistant Curator of the Department of Natural Sciences at the Brooklyn Museum. Humorously and aside from his statement, he suggests that it might be interesting "to hear a music-making contest between Mr. Nathan and a brown thrasher, Mr. Nathan to be armed with his soup spoon and china spittoon, the bird to have nothing except its natural equipment. One of Mr. Nathan's able contemporaries might act as judge."

The judges feel that aside from the honorable mention given on another page to those statements that were excellent, particular mention should be made of the following, whose entries gave the judges considerable judicial worry: Ruth Ericson, Washington, D. C.; Edmund J. Sawyer, Park Naturalist, Yellowstone

WHAT MR. NATHAN SAID

"THE MUSIC OF BIRDS. —*Perhaps the most persistent of legends is the theory that the noises of birds, commonly called singing, are musical. The notion has been born solely out of the sentimentality of love-smitten and befuddled numskulls. In such instances as a few first-rate musicians, e. g., Beethoven, have employed bird sounds in their compositions, they have done so only in humorous, aye, in semiderisory, terms. The best way in which to detect the utter absence of anything genuinely musical in a bird's chirpings is, curiously enough, since the method seems to have escaped persons almost entirely, to listen closely to them. If what issues from a bird's throat is melodious, then what issues from a nanny-goat's is a song by Schubert. The so-called singing of a bird, appraised by a man with a practiced musical ear, is precisely of a piece with the sounds produced by an ungreased wheelbarrow axle. There is five times more genuine loveliness of tone in a river barge whistle, and ten times more in a soup spoon struck against a china spittoon.*"

(Reprinted from "Clinical Notes" in *The American Mercury* for September, 1926.

WHAT MR. DECK REPLIES

If programme-music has failed in its attempts to imprison bird songs on the printed page, it may be not because of a shortcoming on the side of the bird, for of all bird notes, man can reduce only the cuckoo's to his diatonic scale. Because he can make no musical instrument so exquisite in construction or performance as the syrinx of a bird, Mr. Nathan's "man with a practiced musical ear" is not able to attain the heights, the clarity of bird song. The oboe's proudest nasalings do not shame the full, red notes of a thrasher; the piercings of a piccolo compare ill with the icy tinkle of a junco.

If man-made instruments could catch the ethereal sweetness of the nightingale's song, the cheer of the quail's whistle, or the ventriloquial softness of cuck-oo, Beethoven would have had other than a "semiderisory" attitude when he inserted these in his Pastoral Symphony. Does the musical technician shut his soul to bird songs—save the cuckoo's!—because he cannot make them his own? As foolish for the textile designer, after fabricating the feather tones of the bird-of-paradise, to laugh at the fierce purple and blue of a tropical cotinga because he lacks the art to produce and blend these!

Park, Wyoming; Mrs. Marjorie M. Mohler, San Diego, California; Warren W. Harris, South Jacksonville, Florida; Rena Bauer, Stanley Wisconsin; Earl L. Poole, Reading, Pa.; George J. Moellman, Cincinnati, Ohio; John M. Crook, Chicago, Illinois; Donna Baldwin Northup, Denver, Colorado; Timothy Fostnaught, Van Wert, Ohio; Fred Hind, Fort Smith, Arkansas; G. W. Rawson, Detroit, Michigan; Edwin S. Ross, Jr., Arden, Delaware; L. Raymond Talbot, Melrose Highlands, Massachusetts; Myrta Belle Swallow, Gladstone, Oregon; Margaret E. Murie, Ann Arbor, Michigan; Helmi Lukkarila, Mount Iron, Minnesota; Lady Ella Oliphant, Toronto, Canada, and Dr. John T. Grant, San Francisco, California. Miss Ericson's, Mr. Sawyer's and Mrs. Mohler's statements are printed below, as well as the names of many deserving honorable mention.

Are Bird Songs Musical?

By Ruth Ericson

For us who have heard and know, there is no need of refuting Mr. George Jean Nathan's contention that the noises of birds are not musical.

We have fed the white throated sparrow in winter and listened to his flute-like whistle. We have gone to a lightly wooded thicket when the snow was scarce off the ground and feasted our souls on the music of hundreds of birds—fox sparrows, song sparrows, juncoes, chickadees, nuthatches and goldfinches—all singing together with never a discord, with no lack of harmony; a feat impossible to any other creatures in the world.

We have walked in our gardens very early some April morning, and marvelled at the burst of music from the throat of a tiny ruby-crowned kinglet. We have sat down to rest on a mossy log in the deep wood and have been soothed by the evensong of the wood thrush. We have heard the cardinal's courting song that is so inexpressibly sweet.

We have listened to all this music with ears that have not been dulled by a city's noisy clangor. We have heard with our ears and we know that Mr. Nathan is wrong.

"The Music of Birds"

Edmund Joseph Sawyer

For a person trained in man-made music to discredit music in birds is rank egotism which, truly, is a strictly human possession. Birds sang for ages before man, groping, twanged a string or blew on a hollow stick or beat on rawhide and deemed that music. Birds' songs have ever been the inspiration of musicians, the favorite theme of poets. An idolizing world named its greatest singer The Swedish Nightingale. All Nature poets have paid tribute to bird music, the best-qualified paying the highest tributes—the Wordsworths and Thoreaus of our race. To deny bird music on grounds of human technicalities is exactly like denying bird flight on the ground that birds know nothing of aeroplanes—human flight. Millions of discriminating persons, since man was first "moved by concord of sweet sound", have found the songs of birds inspiring, elevating, thrilling, harmonious to them beyond all human creations. When a combination of low, unobtrusive sounds can so intrigue the ear with aesthetic appeal as to move the soul with religious emotion and rapture—this is music in the truest sense. Such is the music of thrushes.

Bird Songs are Musical

Mrs. Marjorie M. Mohler

Just why the flute-like notes of birds have called forth the bitter denunciation they have from our erstwhile Critic is difficult to comprehend unless, as the Editor of Nature Magazine suggests, he has never had the privilege of hearing other than the chirpings of sooty sparrows about a city's dirty eaves. Certainly he has never arisen at dawn, when the world is sparkling with dewey freshness and listened to a meadow-lark heralding in the new-born day with the mellow clearness surpassing any flute man ever created nor has he listened in some country lane to a wood-thrush's good night song. To compare the versatile and modulated trilling of a bird's singing to the bleating of a nanny-goat is as unreasonably senseless as to compare a baby's cry to the singing of a Galli-Curci. A base viol is a hideous sound when blurted out like the bellowing of a calf yet becomes a thing of beauty under skilled handling. Sentimental numbskulls perhaps, but better far to be thus attuned to the sheer beauty of such silverytoned harmonies created by the Master Musician than to be so starved as to recognize music only in the artificial devices of man's fashioning.

Honorable Mention

The judges feel that honorable mention should be given to the following entries in the Bird Songs Contest by virtue of the quality of the statements:

ARKANSAS

Mrs. John R. Cox, Waldron; Mrs. M. C. Gilmore, Rogers.

ARIZONA

Harold Garber, Tucson; C. B. Wivel, Tempe.

CALIFORNIA

Gail Lyser, North Bloomfield; Mrs. Alfred J. Smith, Berkeley; Miss Frances McQueen, Los Angeles; Mrs. L. Heintz, Petaluma; Miriam Allen deFord, San Francisco; Mrs. Bernice S. Evans, Oakland; Maude Robson Gunthrop, Mills College; Eugene L. Roose, Los Angeles; Dr. Ann Perry, Los Angeles; El Vera Waters, Los Angeles; Mrs. Dan Dyer, Los Angeles; Loretta C. Reynolds, San Francisco; Amelia S. Allen, Berkeley; Mrs. M. D. Gould, San Francisco; H. May Pearsall, Eureka; Melcena Burns Denny, Los Angeles; John D. Blaine, Campbell; N. H. Button, San Diego; William C. Snyder, Berkeley; Hans C. Hutteball, Berkeley; H. N. Miner, Blue Canon.

COLORADO

Mrs. Ira Pruitt, Lamar; Mrs. Franz Cazin, Denver; Maria Cazin, Denver; Grant U. Marcy, Ouray.

CONNECTICUT

Annette Brown, Farmington.

DISTRICT OF COLUMBIA

Vera Lawrence, H. Graves Beauchesne, Miss Augusta M. Swan, Francis N. Stacy, Margaret Jane Russell, Takoma Park.

FLORIDA

Alice C. Cole, Eustis; Mrs. W. E. Watson, Sanford; Miss Edna F. Byrons, Auburndale.

GEORGIA

Mrs. Morris Bryon, Jefferson; Mrs. Fritz R. Jones, Atlanta; Mrs. Jane Walker Fletcher, Pelham; Mrs. J. L. Beeson, Milledgeville.

ILLINOIS

Mrs. Walter Gonwa, Chrisman; Elsie M. Prentice, Utica; Lucia Ketcham, Indianapolis; Mrs. H. U. Moore, Evansville; J. A. Moore, Prophetstown; Alice M. Bowie, Rockford; Janet Hull, Chicgo.

INDIANA

Sallie Dawson, Terre Haute; Henry A. Link, Waterloo.

IOWA

Miss Mildred Bethel, Preston; Mrs. C. A. Roberts, Fort Dodge; Miss Sue Small, Clinton; Mrs. Chas. T. Schenck, Red Oak; W. H. H. Barker, M. D., Harvey; Margaret Divelbess, Greene; Mrs. Georgia D. Robertson, Ames; Neva R. Wackerbarth, Independence.

KANSAS

Wilfred Goodman, Clearwater; Creola-Chas. Branche, Pratt; H. H. Schwardt, Manhattan.

KENTUCKY

Edwin Carlile Litsey, Lebanon; Joyce Felts, Millersburg.

MAINE

Laura Tolman-Kilgore, Harrison; Peter Pan, Harrison; Mrs. Harriet A. Rice, Harrison; Mrs. Harry E. Jordan, Ea. Holden.

MARYLAND

Della McGovern, Baltimore; Mrs. John C. Baldwin, Baltimore.

MASSACHUSETTS

Mrs. Kenneth B. Wetherbee, Worcester; Adeline R. Phelan, Lynn; Vera Campbell Darr, Northampton; Mrs. J. L. Sturtevant, South Sudbury; Mrs. Viola F. Richards, So. Deerfield; Allan Keniston, Vineyard Haven; Miss Catherine Curtis, Woburn; Miss Marjorie Howe, Fairhaven.

MICHIGAN

Morris Huberman, Detroit; Mrs. J. S. Harris, So. Rockwood; Sarah McAlvay Gillam, Lansing; Mrs. Kenneth Artley, South Rockwood; Gordon E. Van Loon, Highland Park; Josephine Jackson, Kalamazoo.

MINNESOTA

J. W. Stokes, St. Paul; Dr. Joseph De Young, Edgerton.

MISSISSIPPI

Benj. R. Warriner, Corinth.

MISSOURI

Emma Starr, Mexico; Josephine Lyon, Fisk; Mrs. Carl Garner, Branson; Miss Zeta M. Simpson, St. Louis; Mrs. L. A. Bradbury, Jefferson Barracks; Mrs. H. E. Waters, Golden City; F. D. Hyatt, Kansas City; Mr. A. H. Foote, St. Louis.

NEW JERSEY

Mrs. W. C. Bohn, Maplewood; Mr. Charles Henry Holmes, Chatham; Ann M. Wyckoff, Belmar; Florence Robertson, Bayonne; Wm. Bryson, Camden; Mrs. Charles Schoonmaker, Little Falls; Miss Ruth Ekdahl, Bergenfield.

NEW MEXICO

Lora Hackler Cox, Clovis; Bert Cassan, Raton; Geo. Dillman, Raton; Carl Schwachheim, Raton; Elizabeth B. Long, Raton; Emily G. Long, Raton.

NEW YORK

Rev. Henry H. Barstow, Auburn; Eleanna S. Merritt, Walden; Chas. Roome Parmele, New York City; Mr. John Severin Branne, New York City; C. E. Roser, Boonville; Martha E. Schulz, North Collins; Cynthia Church, Great Neck; Sydney Weinstein, New York City; Elizabeth Huntington, Pleasantville; Mrs. H. B. Prindle, New York City; Carl A. Stettenbenz, Buffalo; Homer W. Anderson, Middletown; Frances Fletcher, New York City; George W. Dorland, Bayside, L. I.; A. Y. Weller, Brooklyn; Beulah Pennell, New York City; Paul A. Martin, D. D. S., Rochester; Mrs. F. B. Harwood, Orchard Park; M. J. Blunt, Hillsdale; John D. Clute, Buffalo; Bernice E. B. Nicolson, New York City; Mrs. Catherine Lasher, Fort Johnson; Schuyler Miller, Scotia; Eloise C. Miles, White Plains; M. I. Knopfelmacher, M. D., Bronx; W. M. Caldwell, Fulton; Celia T. Howell, Oyster Bay, L. I.; Katherine S. Harrington, Roosevelt, L. I.; Mrs. Chas. Vail, Newburgh; Isavel Payne Kerker, Brooklyn.

NORTH CAROLINA

Arthur M. Gates, Durham; Mrs. Byron Clark, Salisbury; Ray R. Fisher, Salisbury; Lillian

(Continued on page 59)

PLANS FOR AMERICAN FOREST WEEK

California Leads Way in Education as Forestry Primers Reach Million Mark

ONE million copies of the Forestry Primer are in circulation in anticipation of American Forest Week April 24. Between now and that date new thousands will be enlisted in the educational campaign of the American Tree Association leading up to the Week. This Primer of plain phrases on the forestry situation was published by the American Tree Association to mark the semi-centennial of the first step in forestry by the U. S. government and started with an edition of 100,000 copies. The demand became so great that nine editions have since been printed. Thus the tree planting army has helped to spread the forestry message throughout the land, and thus the coming generations will have a ground work in forestry that will make the nation forestry-minded before the forestry centennial in 1976 arrives. In three States, —California, Minnesota and Louisiana, —great advance was made in forestry when voters approved steps to amend their constitutions so there can be changes in forestry tax laws.

Distribution of the Forestry Primer has been made through many avenues. Boards of Education in many States are sending out the Primers by thousands, as in the case of Ohio, New York, Pennsylvania, California, and Texas. In California an outstanding campaign is now under way through the District Office of the U. S. Forest Service, Boy Scouts and the California Development Association (State Chamber of Commerce). The last named organization is presenting the Forestry Primer to the school children of California. S. B. Show, the District Forester, and Charles N. Miller, the Regional Scout Executive, have worked out a plan whereby every Scout in the State will be presented with a package of forestry literature when he reaches the Merit Badge class. In this package will be the "Handbook of Fire Prevention for Children", a new bulletin and map on the National Forests of California, and the Forestry Primer. This combined with the distribution being made through C. G. Dunwoody of the Development Association is, according to Charles Lathrop Pack, President of the American Tree Association, the most intensive educational campaign leading up to American Forest Week being carried on in any State. It is such campaigns as this the American Tree Association is proud to have a part in, he points out, and such campaigns will make the coming generation "forestry-minded" before the Centennial of forestry in 1976 arrives.

* * *

The tree planting army is sending in reports of the fall season's work. From Bogalusa, La., comes a tree planting with great vision behind it. When the National Retail Lumber Dealers Association visited Bogalusa, one of the things that was shown them was one and one-half acres of ground nicely fenced, with a sign erected on the property, that reads as follows:

"This Planting is the Property of the National Retail Lumber Dealers Association.

Planted on November 12, 1926, with Long Leaf Pine Seedlings Eight Months Old.

As the Years go by Watch the Long Leaf Trees Grow.

And Ask For a Report on Your Tree."

HOW ABOUT YOU DADDY?

By John D. Clarke

Co-author of the Clarke-McNary Bill

Every regular Dad should want his boy to know trees; in order to help the boy, Dad must know the different varieties of trees; any book, conference, or association that will help Dad to this information should reflect itself in the boy if Dad is, as he should be, a chum and companion to the boy.

Regular Dads teach their boys, through long walks in God's great out-of-doors laboratory, many of Nature's mysteries.

Trees, as forest cover for wildlife; trees, as protectors of our hillsides from erosion; trees, as retarders of the run-off from the rains; trees, as helpers in keeping our streams more even in their flow, therefore, more and better swimming holes, better skating, better fishing, better boys.

Let's be regular Dads and each year go in partnership with Sonny in planting trees on some idle acre.

So the tomorrow, made better for the children of the tomorrow, by idle acres set to work growing trees for Sonny, is a part of my mission, for I want to be a regular Dad.

How about you, Daddy?

There are 650 little pine seedlings planted here and each seedling is numbered. Every lumberman was given a tree and the number handed him to correspond with the number attached to his tree.

From time to time they will be advised as to how their tree is growing. Every year at the annual meeting a photograph of the plot and a full report will be submitted by the Great Southern Lumber Company. As the years go by and the trees grow, if death claims the owners, the trees will pass on to their successors and will be a living monument for many years to the lumbermen who held their convention in the long leaf pine territory of the south. These trees are registered on the National Honor Roll of the American Tree Association.

* * *

A memorial forest of 10,000 young white pines has been planted on a plateau under the shadow of Tongue Mountain on Lake George by the state of New York as its tribute to Gene Stratton-Porter. Governor Smith designated Addison B. Colvin of Glens Falls to represent him at the ceremony, and Joseph J. O'Neil represented the Gene Stratton-Porter Memorial Week Committee. Patrick J. Cunningham of the Conservation Commission was present with a planting crew composed of rangers from his district. This is the second forest New York State has planted to the memory of a famous American woman, the first being the Clara Barton Memorial Forest near Saranac Lake. Among those who attended were Mrs. Leon Janinet, New York State Federation of Women's Clubs, Mrs. Lee Porter Hynes of the Albany Woman's Club, Rev. and Mrs. Charles W. Findlay of St. Andrews, Albany, Herbert F. Prescott, Secretary of the Conservation Commission and Mrs. Prescott.

* * *

A tree planting ceremony under the auspices of the Polish Societies of Greater New York took place in City Hall Park to mark the Sesquicentennial of the arrival in this country of General Kosciusko and General Pulaski of Revolution fame. Two thousand school children attended.

* * *

Boys in New Milford New Jersey, under the direction of E. A. Hegi, have started a unit of the American Tree Association by planting trees, and certificates of membership have been sent the following: Kenneth Siver, Michael Monahan, Daniel Monahan, James MacBurney, Jerome O'Connor, Robert Kavanaugh, Garrett Felter, Edward Hegi, Jr., William Bertholf, David Carrick, Thomas Fitzgerald, Thomas Shaughnessy, Milton Martin, John Gurd, Barry Ross, Paul Hegi.

* * *

Walter Leach, District Forester of Mount Union, Pa., and Forest Rangers J. H. Kauffman and H. A. Oppel secured three trees, each about five feet high, for planting on the borough school grounds at Mount Union on Arbor Day. The principal of the grade schools, Mrs. Eva Steward, conducted the Arbor Day program, in which about 1000 students of the Mount Union schools participated.

* * *

Drawing and crafts are turned toward tree study and forestry subjects by C. F. Whitney of the State Normal School at Salem, Massachusetts. Not only do the pupils in the training school write on these subjects but much of the copy in the printing shop is on trees and forestry.

Nature in Print

A Bounteous Earth

A new name has been added to the front rank of Nature writers,—the name of Peattie. The arrival has not been attended with any great fanfare of trumpets, but it has been rapid. Nature Magazine has been privileged to watch its course and its issues have contained a number of articles by Donald Culross Peattie. There is one in this issue, in fact, and this year will see his name several times above articles in these pages.

But we are wandering from our knitting. The reason for the opening sentence above is the receipt for review of *Bounty of Earth,* sent by D. Appleton and Company and bearing the names of Donald Culross Peattie and Louise Redfield Peattie. It is a novel of Nature,—we suspect in no small measure autobiographical in character,—written with a charm which we feel definitely sanctifies the wedding of the author's literary ability to his scientific background. Such unions are only too rare.

This volume concerns itself with a slender story of a young couple and a small youngster who wisely and happily flee a city flat and musty office for Nature's out-of-doors. The authors have drawn their characters well but not at the expense of their central Nature theme. The whole makes delightful reading and leaves much behind with the reader. The publishers ask two dollars for the book, which is not too much. R. W. W.

Thinking About Thinking

A book entitled "Thinking About Thinking," by Cassius J. Keyser, has made its appearance. This essay will be appreciated for an evening of quiet and serious reading, when one turns wearily from the lighter and more popular "best sellers." Here will be found much to stimulate thought and reflection as to the inner working of the mind, and arouse interest as to whether one's thoughts might properly be classified as autonomous. The earliest outstanding achievement of autonomous thinking, the essayist tells us, was in Euclid's *Elements,* and in the ninety-one pages of the essay is explained painstakingly just what constitutes autonomous thinking and its relation to other thinking. The book is one of the "Today and Tomorrow Series," published by E. P. Dutton & Co., New York, and the price is one dollar.

Birds in City Parks

We are delighted to know that *Wild Birds in City Parks* by Herbert Eugene Walter and Alice Hall Walter has gone into twelve editions. It is an encouraging sign, testifying as it does to a growing audience for the songs of our bird friends and a growing body of their champions. They need champions. This little volume is subtitled "hints on identifying 203 birds, prepared primarily for the spring migration in Lincoln Park, Chicago, but adapted to other localities in northeastern United States and Canada." It is a pocket volume, a book that will become well thumbed, for it is a key to the bird that sings from the willow branch, chirps from the broken limb of a maple or twitters as it feeds on the ground. In other words it is admirably designed to identify the birds and is so worked out that the neophyte can use it. The MacMillan Company brings out this twelfth edition, which sells for $1.50.

A Metric Standard

Naturally in scientific circles there is interest in the movement to standardize and decimalize the yard, quart and pound on the world metric basis. There is pending before Congress a joint resolution to this end, seeking such a change effective after 1935. There is, therefore, interest in a pamphlet entitled *The Metric Advance* published by Aubrey Drury, Director of the All-America Standards Council. This pamphlet is a discussion of the movement and a report of progress and those interested may obtain a copy for ten cents from the Council at 681 Market Street, San Francisco, California.

For Florida Visitors

There comes to hand a handy little pocket guide that should be of service to the visitor to Florida who carries with him an interest in trees and shrubs. This little guide is entitled *Plants, Shrubs and Trees of Northern Florida.* It covers seventy-five of the more conspicuous species; is written by Nellie Irene Stevenson; and can be obtained from the author at Fayette, Iowa, for fifty cents.

For Sick Raspberries

Have your raspberries or blackberries shown signs of needing medical attention? If so you will find Farmers' Bulletin 1488-F of the United States Department of Agriculture of value in describing the diseases and outlining measures for their control. The bulletin can be obtained from the Department of Agriculture in Washington, D. C., as long as the supply lasts.

Get a Looking Glass

Once so fortified you are in a position to read *All Through the Day the Looking Glass Way,* an original little book for children worked out by Jean Broadhurst of Columbia University and Published by J. B. Lippincott Company. The subject matter, the looking glass reveals, is birds and animals with a little text in large print for the youngsters. We should think it would be a very happy solution of the problem of a gift for some young friend. The cost would be $1.25.

Near Nature's Heart

Mr. Crawford Jackson of Atlanta, Georgia, has dedicated his volume of verse, *Near Nature's Heart,* to every child, and through its pages and rhythms seeks to interpret Nature for their benefit. The book is fully illustrated, not only with half-tones but with a number of color plates, and is attractively printed and bound. It is sold by the author, whose address is 609 Atlanta National Bank Building, Atlanta, Georgia, for $2.50.

Do Birds Think?

"Over our kitchen door we have a wild grape vine arbor and every summer, for the past ten years, the brown thrashers have built their nest in its thick vines, invariably taking away four lusty youngsters in the fall," writes E. P. Rogers of Omaha, Nebraska. "During the summer the old birds would become quite tame, and after the little ones were hatched out, would pick up food tossed to them. A luscious angle worm, dug up out of the garden and thrown at them, was eagerly captured and taken to their babies, so they soon learned that anything thrown was for their benefit.

"There is a large angora cat in the neighborhood that would sneak around the shrubbery and watch these youngsters after they had left the nest and were learning to fly. The old birds would always know the cat was there and start a chirruping noise that sounded like striking two marbles together, flying around in circles, making a great fuss. I would throw something at the cat sending it scampering away and the old birds apparently noticed that this was for their welfare.

"One afternoon I was working around the front yard, out of sight of the stamping grounds of the thrush family, when suddenly both old birds, with feathers ruffled and dander up, chirruping incessantly, louder than ever, came flying around my head, lighting close to me, looking straight at me, and very evidently doing it to attract my attention. I surmised what was up and picked up a small rock. The old birds immediately flew to the shrubbery where the cat was hiding. I drove the cat away, the parent birds got the young ones out of hiding, and all was serene again.

"Do birds think? I'll say they do!"

Nature News and Views

"Gobs" in the Forest

Judging from the experience reported by Forest Service officials of the North Pacific district, it might be well if many Americans were forced to spend much of their time on the ocean wave. In groups for more than a month this last summer, three thousand sailors from the Pacific battle fleet visited the Olympic National Forest and spent from three to ten days in it, camping and hiking. The sailors left no campfires burning, caused no forest fires and respected the game laws. Can it be that the boys who defend us on the seas appreciate our forests more than we do? In any event, the district forester sent a letter of appreciation to the commander of the fleet recommending gobs as forest visitors.

Foresters to Meet

Announcement is made by O. M. Butler, secretary of the American Forestry Association, that the association will hold its annual meeting in New Haven, Connecticut, on January 28 and 29. The Connecticut Forestry Association will be the host at the 1927 meeting and the facilities of the Yale Forest School will be at the disposal of the members and delegates.

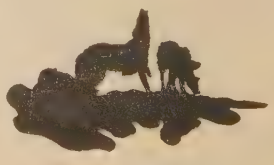
Candy Proves Popular

Commenting on the wise grackles reported in the October issue as soaking their food before eating it, Mrs. Ansel O. Cole of Clinton, Iowa, writes us of an interesting bird party she held for her many bird friends. A friend who is a candy manufacturer presented her with a twenty-pound box of candy that had "gone wrong." He said it was for her birds but it was with some misgivings that Mrs. Cole made the offering on the birds' feeding table. The result was surprising for among those who attended the party were robins and their young, orioles and their babies, catbirds, bluejays, cardinals, rose-breasted grossbeaks, chickadees, nuthatches, tufted titmice and, of course, English sparrows. Grackles flocked in and carried off bits to their young. They also tried the soaking process in the bird bath and appeared much surprised and chagrined to see the candy dissolve.

A Companionable Dolphin

Please imagine that you are standing in the bow on the port side of the Kedivial Mail Steamship "Famaka" en route from Athens, Greece, to Port Said, as was Fred C. Ells, when this picture was taken. If your imagination is working well you can now look down to the waters below and see a dolphin leaping clear of the water. Would you, in such a case agree with Mr. Ells in his theory that dolphins, who like to play in this way, are carried forward by the force of

the steamer pushing the water, somewhat like a surf board on a wave? No doubt he is right because there is a certain amount of suction or drag attending the passage of a ship—"dead water" as the sailors call it. Perhaps the fish enjoys the sensation of a free ride of this sort. In any event, it is an interesting and unusual picture that Mr. Ells sends us.



$200,000,000 Stolen

Economy is the keynote of the administration of our national government just now but nevertheless two hundred million dollars are being stolen from the American people, particularly the farmer every year by one thief. This culprit is erosion and the total of his thievery is set by Hugh H. Bennett, soil scientist of the scientist of the United States Department of Agriculture. He asserts that soil erosion is the most important problem confronting the conservation of our natural resources. When, for instance, our petroleum products are used up, fuel can be produced from the soil in the form of alcohol from potatoes, sugar cane and other crops; that is, if the soil is not wasted, too." Millions of tons of rich soil are carried away every year, Mr. Bennett points out and the United States is far behind most nations of the world in soil conservation. Forest growth is one of the most important factors in preventing erosion and we must not forget that we have laid waste some 80,000,000 acres of land fitted only for forest and left them waste.

Nature and Church

The First Parish Church School in Dorchester, Mass., is working out an interesting course in Nature Study. At present it is confined to Sunday School children of eight and nine years and consists of fourteen main subjects taken up during the year. These texts are taken from Nature but have their human application as well. The subjects are worked out by having the youngsters draw upon their own experience or upon various sources of reading for instances in Nature which illustrate the several ideas. Notebooks are kept, pictures gathered and short essays submitted. Space does not permit further enlargement on the plan but the Rev. Lyman V. Rutledge, The Manse, 29 High Street, Dorchester, Mass., is in charge of the work and wishes to obtain cooperation and advice from others in the field of Nature Education. He wishes particularly contributions in the way of pictures and stories.

The What Is It Plant

The What Is It plant sometimes called the Rangoon Creeper *(Quisqualis indica)* earns its name as it is one of the freakiest freaks of Nature. It is a native of Malaya and a member of the Combretaceae family. Two persons who had viewed the blossoms on different days might engage in a strenuous argument as to its color, as it is scarlet one day and white the next, a sort of floral chameleon. It is a shrub until it reaches a height of about three feet when it suddenly sends up a new shoot that climbs any nearby tree, and the original shrub then perishes.

No Birds, No Crops

There is no comment necessary to add to the following editorial from the Waco (Texas) Times-Herald. The paper tells the whole story when it says:

"Over and over again has this newspaper shouted from the housetops, No birds, no crops. More than once has it alluded to the fact that a farmer in South Texas had no insects in his cotton because turkeys ranged the field. Now comes the Hillsboro Mirror with this impressive lesson along the same line:

" 'Out on the Frank Schofield farm during the fight against leaf worms there was one tract of cotton the worms did not make any headway in, and no poison was used. The birds protected this farm. Mr. Schofield is responsible for the statement that literally thousands of them ranged this tract of cotton continually and kept the worms down. The plague of cotton pests is a development of the last few years, and during the same period there has been a cry of scarcity of birds. May it not be true that the presence of the cotton pests is largely due to the scarcity of birds?'

"If you kill off the doves and the partridges and all the rest, as we seem bent on doing, then we must go extensively into the raising of turkeys and other like birds or see the insects take our crops."

Seek New Plants

To study the botany of Colombia in a territory hitherto unexplored by American botanists, an expedition of the Smithsonian Institution has gone into the field. The party is under the leadership of Ellsworth P. Killip, botanist of the National Herbarium, and is financed jointly by the New York Botanical Garden, the Gray Herbarium, the Arnold Arboretum and the Smithsonian.

A Dollar Flower Garden

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Mammoth Pastel Zinnias

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Balcony Blue Petunias

Superb. An exquisite pure violet blue, uncommon in flowers of any kind, never before seen in petunias. Mass of bloom, early and late.
Seed Packet 25c

Sweet Scented Lupines

Tall spikes of pink, rose, sky blue, fawn, and harmonious blendings. If cut frequently, bloom from May till fall. Delicate and enchanting perfume.
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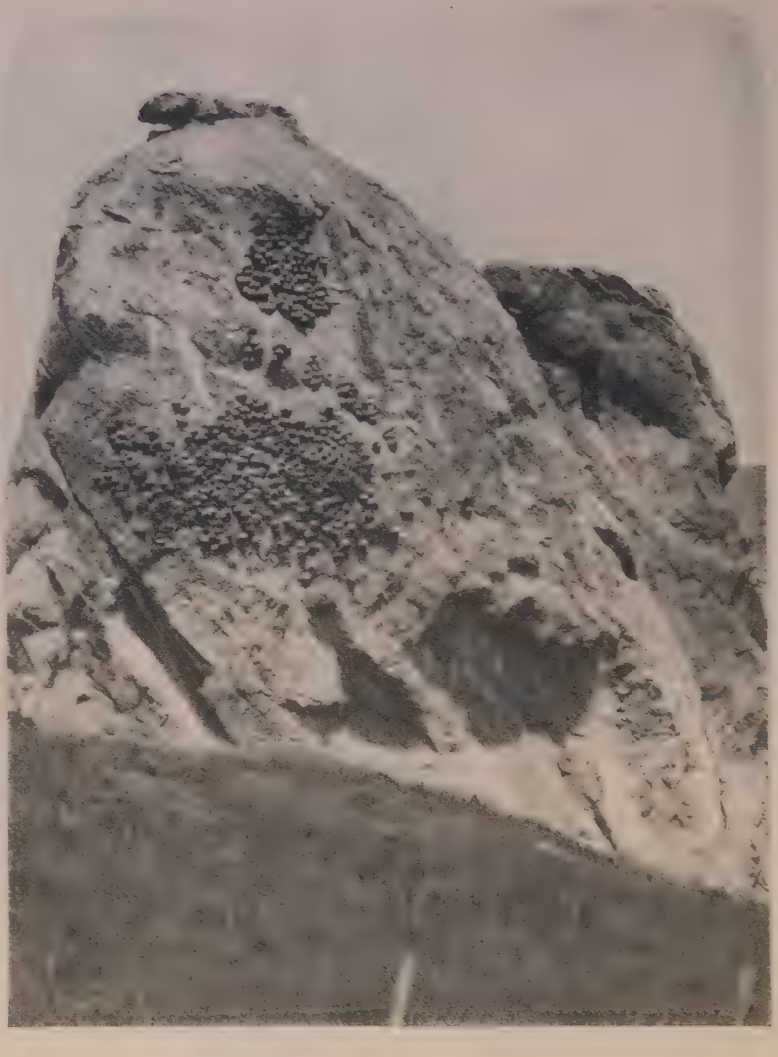
A Unique Bird Rock

By Dr. Carl H. Bryant



THIS lone rock situated alongside a country road near Atascadero, California, has been for many years the nesting site for a large colony of cliff swallows. At the base of the rock lies the debris, the result of the winter storms which wash away a goodly part of the work of these mud-builders. With the coming of spring the rock becomes much like a beehive in appearance with the swallows substituted for bees.

A comparison of this picture with one taken on a previous nesting season makes it appear that the old nest is repaired where there is anything left to repair. The total number of nests seems to be increasing as might be expected. Those who are accustomed to call this swallow by its other name, eave swallow, will see that it is in reality a cliff swallow as well. The forehead and rump bear the easily identifiable markings of this bird and once identified it is thereafter easy. The forehead identification is generally made when the bird peeps out of his nest hole; the rump identification when the bird is in flight. I would call these areas a buffy white as seen under these conditions but authorities who have studied the bird in hand must be more exact. At any rate these areas are light in color and stand out in contrast to the rest of the plumage.

Wise Sealion

By Ethel Mason

THE SEAL REPORTS ON THE SICK LIST
He came up the patients' gangway on the Navy hospital ship and demanded treatment.

ANYONE who has ever watched the antics of a trained sealion is soon aware that it is an animal of rare intelligence. The wild animal appears to have brains and is not afraid to use them, as is shown by the recent newspaper account of the six months-old pup that climbed aboard the port gangway of the Navy hospital ship, the "U. S. S. Relief," for special treatment.

According to Commander D. M. Wood, who was in charge of the vessel at the time, the sea rover not only selected a hospital ship but actually climbed up the patient's gangway by himself, the lower platform of which was nearly two feet above the water. At first he was chased off, but when he still persisted, an examination was made and the surgeon discovered a deep cut, probably made by a boat propeller, just back of the left flipper of the seal invalid.

The cut was then cared for, and the patient swam off, though he later returned for a friendly call of thanks, to the great interest of the bluejackets as well as the medical staff of the "sick bay" on board the floating hospital.

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Dreer's Garden Book

not only helps you decide which Flowers and Vegetables you want, but tells you how to have success with them. The 1927 edition lists everything worth while in Seeds Plants and Bulbs, with numerous illustrations.

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The Glass Snake

Commenting on the article in the September, 1926, issue on the glass snake, Mr. Frank A. Schilling of Los Angeles writes that on one occasion he came upon a greenish-colored snake between 15 and 18 inches long crawling in the grass. Hitting it, the snake separated into five or six sections, each of which kept moving around. Mr. Schilling said that having heard that they might reunite he crushed the head. Miss Cochran of the National Museum and author of the original article states that these observations are interesting but that the snake would die if the body were broken anywhere between the head and the base of the tail.

The Original Laurel

Did you know that those pretty little compact trees which you often admire growing in tubs in gardens or conservatories and whose leaves are so often used in cookery or tucked by way of ornamentation into those alluring steamer baskets of fruit, are Sweet Bay Trees, *Laurus nobilis,* and that this is the "laurel" of literature and history, the tree the ancients held sacred to Apollo and with the leaves of which their heroes were crowned? It is a native of the Mediterranean region, and belongs to the same family as our sassafras and spice bush.

An Achievement?

We reprint the following at the request of one of our members. No comment seems necessary.

THE TRAGEDY OF THE BEARS

To the Editor of The New York Times:

I read the story in THE TIMES, "An American Girl Kills Eleven Bears in Arctic," with real grief over the tragedy that hangs about the domain of the great white monarchs of the Arctic, and with regret that it was an American girl who invaded the peaceful home of the Arctic bears to slaughter. What will humane America's reply be to this—America that is spending millions for the protection of her wild life?

We read of an American girl from California who killed just to kill, and how, with modesty, and yet with pride she relates the story of "killing six bears in one day." A clear eye, a rifle and a bullet, those were the requisities, and concerning the pelts, the mute reminders of those creatures of the Arctic, "they are to be shipped to California."

California laments the passing of her monarch of the forest, the great grizzly bear, dangerous as it was. I believe Californians in their stand for the preservation of wild life and nature's grandeur will not accept the achievement of their citizen as one to be heralded. I hope before another year our American girl may find her woman's heart, when love for God's wild creatures will prevail.

MINNIE MOORE WILLSON.

Kissimmee, Fla., Sept. 30, 1926.

The Pride of Any Rose Garden

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This rose, named for its founder, is unusually strong and grows in any soil with almost continous blooming. We guarantee safe delivery anywhere. One-year-old plants 30c; 4 for $1. Two-year-old plants, 85c by parcel post prepaid. Extra strong three-year-old bushes with soil on roots $1.25, by express, charges collect. Our

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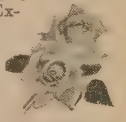

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A Canine Globe Trotter

ONE of the most interesting exhibits at the Smithsonian Institution is a certain small dog named "Owney". He is visiting Philadelphia, this year, as a guest of the Sesqui-Centennial, for he had the distinction of having been the first dog to travel around the world alone.

Owney attached himself to the Post Office Railway Mail Service early in the eighties, and was considered as a mascot on any train he selected to have the honor of his company. People in various cities gave him medals which were fastened to his collar, until the weight became far too heavy and a fresh collection was started.

"OWNEY" AND HIS MEDALS
This remarkable dog has been preserved as an exhibit in the Smithsonian Institution.

Having toured the country repeatedly, he walked up the gangplank of the "Victoria" on August 19th, 1895, and sailed for Japan, where he received an official medal. He then found passage to Shanghai, sailed on the "Post Phillip" with Captain Grant for Singapore, and finally left Port Said for New York by way of the Suez Canal and the Azores.

He had no actual owner, but was loved by the entire Post Office personnel, who bought him insurance, paid his board bills, and cared for him tenderly as long as he lived because he was able to tell a postman as far off as he could see one.

The Cassowary

THE Cassowary, as may be inferred from its appearance, finds its closest relatives among the ostriches. There are upwards of twenty different forms, all inhabitants of New Guinea and certain of the adjacent islands, and these vary greatly in accordance with age and sex.

All the known forms are much alike in the color of the body, the old birds being black and the younger ones brownish, with longitudinal stripes when first hatched. About the head and neck, however, the most gorgeous and fantastic variety of colors are found. All the species have a horny helmet or casque on the forehead, and this and the bare skin and pendent wattles of the head and neck are ornamented with the most brilliant hues of orange, yellow, red, and blue.

All the Cassowaries are inhabitants of forests, and are strictly diurnal. The largest, found in New Guinea, is nearly six feet in height when erect, and with its powerful legs and sharp claws, backed by a pugnacious temper, can defend itself against most adversaries. The wings are the merest rudiments, bearing about five black feather shafts, entirely without webs, and there are no tail feathers whatever. The food is mainly of a vegetable nature, though insects and such other animals as can be picked up are eaten also. In captivity the birds are said to be fond of hen's eggs, and the one here shown is inspecting one, and trying to form an opinion as to its freshness.

PHOTOGRAPH INTERNATIONAL

IS IT A BAD EGG?
The Cassowary, reputed to be fond of hen's eggs, inspects one before dining.

The Cassowary lays from six to eight eggs of a light greenish color, and these are incubated solely by the male. The eggs are about six inches long and are difficult to boil because of their great bulk, but when scrambled or prepared as an omelet, are said to be excellent. A single egg will furnish a meal for several persons.

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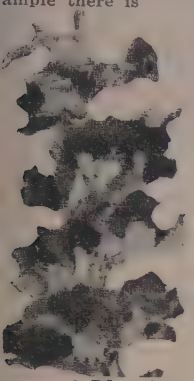

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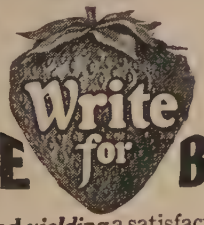

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The Pepper Tree

Every visitor in California has admired the beautiful Pepper Trees *(Schinus molle)* especially the wonderful avenues of this tree in Los Angeles. It is also called the Peruvian Mastic Tree and is a native of tropical America. It bears beautiful rose-colored berries the size of peppercorns, from whence comes its popular name. The berries are much used for decorative purposes in the same manner as holly, and its graceful vinelike foliage with its panicles of purplish-red berries is ornamental long after the berries and leaves have dried. The pepper berries in this respect are like the bittersweet berry. The tree is evergreen and reaches a height of fifty feet. The only indictment that can be brought against it is that it is susceptible to the dreaded black scale, and for this reason many thousands of these beautiful trees have been sacrificed in California, when they menaced orange groves in their vicinity.

A Creditable Museum

If next summer's vacationing takes you into the beautiful playground of the New England White Mountains, Green Mountains or Berkshires, do not fail to stop in St. Johnsbury, Vermont. You will find there a most creditable little museum of which this community of less than nine thousand is justly proud. Its collection is not only quite complete in many directions, but extremely well worked out and some of its habitat groups are such that much larger museums would be proud to own them.

Found at Last

For a century and one-half ornithologists have been seeking the nest and eggs of a rare surf bird akin to the plovers, whose migratory flight covers the Pacific Coast from Alaska to the Straits of Magellan. The lost has been found and the honor goes to Dr. Joseph Dixon of the University of California and George M. Wright, a forestry student at the university. The nest was found in Mount McKinley National Park in Alaska. Readers of NATURE MAGAZINE know Dr. Dixon through his articles in the magazine, the most recent one in the December issue.

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TEN COMMANDMENTS OF THE TRAIL

By HENRY WELLINGTON WACK, F.R.G.S.

(Copyright, 1926)

First. Use the By-Ways—not the Highways.

Second. Don't go Walking to beg a Ride. The auto-riding Hiker is a Fraud.

Third. Everything belongs to Somebody. Then respect all Private and Public Property. Be not the Author of its displacement, disfigurement or disappearance.

Fourth. Keep off Prohibited Ground. Neither fish nor hunt on Posted Land. Trespassers create bad will toward all Nature Lovers, Campers and Sportsmen.

Fifth. Leave Gates, Fences, Signs, Stakes, growing grain and crops as you found them. Walk around, never across, all planted fields.

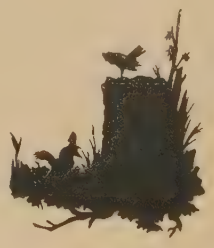
Sixth. Pluck no wild flowers—they belong to all. Leave them for all to enjoy. Pick no cultivated Fruit. Resist the boyhood call of the Melon Patch!

Seventh. Clear away twigs, leaves and pine needles down to moist earth, before laying a Camp Fire one foot square. Keep cook fires low, and less than one-fifth the size of the clearing. Large fires prevent cooking, but destroy forests. Only small fires are safe, quick and comfortable to cook with. Put camp fires out with Water, not with a kick. See that the peat or humus around the fire is not burning underground to destroy the woodland after you have left. A single spark may fly a hundred feet and burn a million trees. Arson is no greater crime than stupidity or neglect on the Trail.

Eighth. Leave campsites clean; Burn all garbage; replace cut Firewood and Supplies found in camps. You are the Guest of an absent Host—not the vandal of a present opportunity. Leave a note of thanks in a wilderness shelter you have used. Put it in order before you depart.

Ninth. Silence, or speech in whispers, is the sign of trail experience and good woodmanship. Only fools and asses bray in a Forest.

Tenth. When you leave a beautiful Woodland or descend from a Mountain, stop, turn around and gaze reverently awhile. Then thank God for the boon our Forests are to all Mankind. Treat Life's Trail responsibly and keep it clean. To the seeing eye and the generous soul, Nature's beauty—her mysteries and charm—forever call us to her Trails!



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A Nature Puzzle

By Alvin L. Chittenden

The following Nature Puzzle conceals a slogan of two words. The answer will be published in the February issue of NATURE MAGAZINE.

My first is in birch and also in spruce;
My second in maple with sweet-tasting juice;
My third is in fir tree, and not found in pine;
My fourth in hemlock on whose seed the birds dine:
My fifth is in redwood, so stately and tall:
My sixth in sycamore, with its queer button-ball:
My seventh in ash,—its fruit is blood red;
My eighth is in chestnut, a species most dead;
My ninth in sassafras, its branches leaf-mittened;
My tenth in white pine, with blister-rust threatened;
My eleventh in tulip, in elm its not found;
My twelfth in the willow, which thrives on swamp ground;
My last is in Spanish oak, growing in sand;
My whole is the saving of vast wooded lands.

Answer to December Puzzle
NATURE MAGAZINE

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(Continued from Page 49)

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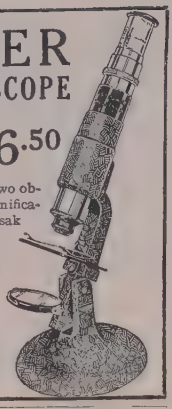

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The Chewing Gum Tree

How many people know what is the basis of most of the commercial chewing gum and from what it is obtained? It is chicle, a milky latex which is yielded by the bark of the sapodilla, *Achras sapota,* a native of tropical America, but now cultivated throughout the tropical and subtropical regions of the world. Its fruit is sometimes offered for sale in the Florida markets. This fruit is about the size of an orange and is very palatable. The tree is evergreen and yields a hard durable wood.

An Egg Story

C. H. Sackett, assistant principal of the Blewett Junior High School in St. Louis, writes that he personally verified an interesting note contributed to the school paper by June Simmons of the Eighth Grade. She writes that a farmer in southern Missouri heard a commotion in his henhouse one morning before daybreak but did not investigate until later. Then he found three setting hens on their nests but one of them

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was sitting on an empty nest and seventeen eggs had disappeared.

"From experience," Miss Simmons writes, "he guessed that either a snake or a weasel was the thief, and his surmise was proved correct when, lifting a loose board, he found coiled underneath a large blacksnake. A few blows on the head were all that was needed to dispose of the snake. Remembering that he had heard that snakes swallowed eggs whole. Mr. Ritter decided to try an experiment. With a sharp knife obtained from the house, he slit the snake down the middle and, greatly to his satisfaction, Mr. Ritter found all seventeen eggs inside, intact. The eggs were returned to the hen and a few days later, sixteen of the seventeen eggs hatched into baby chickens."

Snake and Mouse

Although verse is rarely used in these columns we feel that the story told in the following lines is more effectively put in this form than in prose. This is a story of an actual experience observed by the author of the verse, Mr. S. S. Parker, an attorney at law of Farmington, N. H.:

Along the margin of our sunny lake,
One summer's day there roamed an adder-snake
Searching for one square meal;
And as he, slowly, through the grasses stole
His evil eye fell on a mouse's hole—
Within he hears the young mice squeal.

"Here will I rest me," saith the sly old snake,
"Until the little mice come out to make
Their toilets in the sun;
Then will I shelter them from further harm,
Inviting them within my stomach warm,
There to enjoy their fun."

Just then, returning to her little house,
Came, softly creeping, the old mother mouse,
And soon the snake she saw;
With lightning speed from off the ground
She rises with one mighty bound,
And pounces on the foe.

And swiftly up and down his scaly back,
With claws and teeth she marks a bleeding track,
Scratching with all her might;
While, wild with fright, the coward adder-snake,
With terror stricken speed doth make
An ignominious flight.

And never halts the vanquished adder-snake
Until his own dark den he takes,
Groaning with wrath and pain;
And there a solemn vow he makes,
That he will never undertake
To dine on mice again.

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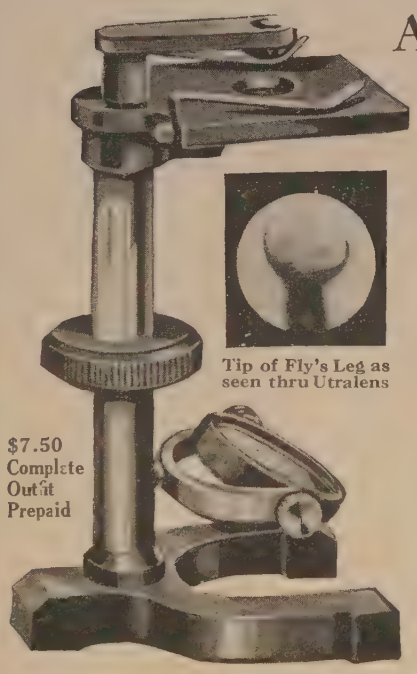

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A Wild Tame Cat

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Cracked Ice, Please!

"It was a quick, tapping noise overhead, not unlike that of a destructive hammer in the hands of one of the youngsters, so I flew up stairs." writes Miss Esther Stone of Annapolis, Maryland. "I had done the boys an injustice, however, for perched on the corner of the piazza roof I found a bluejay diligently chipping bits of ice from the frozen rainwater in the gutter. I thought, of course, that he was trying to get at the water underneath, but no, he was eating the ice with evident relish.

The next day he was back, this time, with a friend and the both made the ice fly as they ate the chilly morsels. This was some winters ago and since then there has been a bird bath in the yard for our feathered friends, summer and winter."

Poison Ivy Remedy

One of our fellow members, Mr. Charles F. Krieg of Columbus, Ohio, sends in the following experience with relation to poison ivy poisoning. Mrs. Krieg inadvertently was poisoned and the difficulty began to spread, he says. A relative who formerly lived in the country told her to crush the leaf of a garden bush bean and rub the juice over the affected part. She did this and the effects of the ivy disappeared in a few days. A few months later Mr. Krieg himself was poisoned and resorted to the same remedy with a similar cure. He says that while neither case was serious and he does not know why the cure was so effective, he would like to pass it on for the benefit of others who may lack any other handy remedy.

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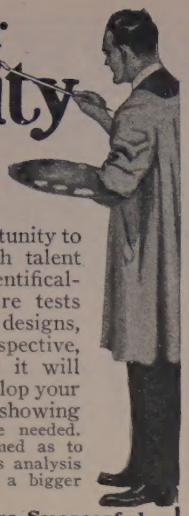

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ANSWER: We believe that the fastest animal is the trained race horse. Certain types of greyhounds have practically the same speed. Our antelope and coyote are among the fastest wild animals but they can be caught by a running horse. The hunting leopard or cheetah of Africa and Asia is probably the fastest known animal for a short distance, but it lacks endurance.

QUESTION: *Which bats hibernate and which migrate?—A. D. A.*

ANSWER: Most of our bats hibernate and a few are known to migrate, but comparatively little is known as to details. The red bat, the silver-haired and the hoary bat are positively known to migrate from the more northern part of their range. While the big brown bat and the little brown bats are not known to migrate, it is not unlikely that some species of the latter group do move southward from their northern range.

QUESTION: *Which is the largest frog in the world?—P. L. W.*

ANSWER: The largest frog is the Goliath Frog of the Cameroons, Africa.

QUESTION: *Is the bite of the horntoad poisonous?—O. M.*

ANSWER: Horntoads are entirely harmless and I have not heard of their attempting to bite. They live on insects, principally ants, though they will eat many other species. They usually lay eggs burying them in the earth in some warm place and leaving them to hatch. Some species, however, sometimes retain the eggs within the body until they hatch and then give birth to living young.

QUESTION: *Are the berries of the Virginia creeper poisonous?—K. J. C.*

ANSWER: The berries of the Virginia creeper are not considered poisonous, and they are eaten very freely by many birds, apparently without injurious effects. They contain crystals of calcium oxalate, however, which is, I believe, deleterious if taken in quantity.

QUESTION: *Do pocket gophers carry dirt in their pockets to make their mounds? E. S.*

ANSWER: No, pocket gophers use their cheek pouches only for carrying food. In digging their burrow they loosen the dirt with their powerful front claws and push it back of them. When they have collected a handful or so they turn around, usually making a sort of head somersault, and push back the accumulated dirt with their front feet and chin. Successive armfuls of earth thus pushed out make up the mounds. When they have gone as far as they care to carry the earth back they push a few armfuls into the open end of the hole, thus closing it, and start a new mound.

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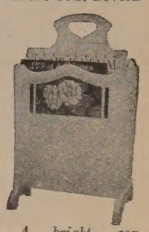

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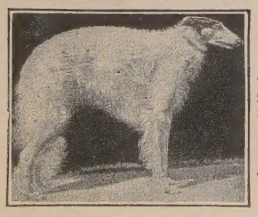

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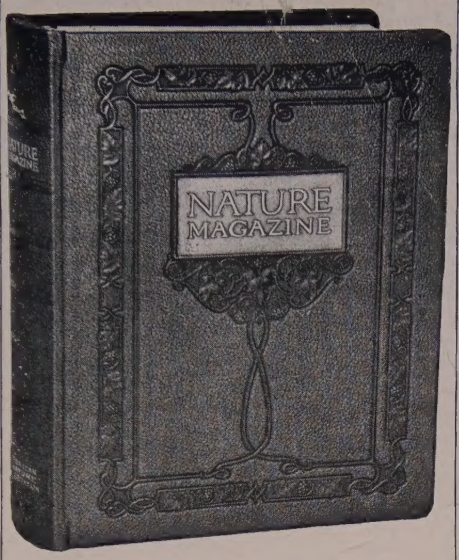

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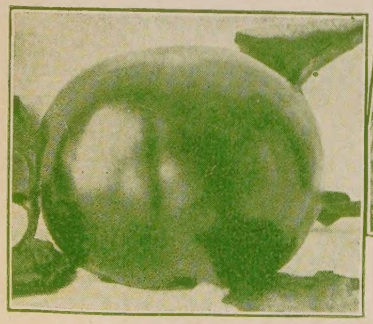

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